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COMPUTERWORLD

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IBM answers critics on object code practice.

Shake-up at IBM redraws lines of power

Product groups shuffled; divisions gain day-to-day control

BY ALAN ALPER
CW STAFF

NEW YORK — Seeking to brighten its future after three lackluster years, IBM last week transferred key product design, manufacturing and marketing decisions to five independent business units.

Decentralizing decision-making authority for its domestic manufacturing and development operations from its corporate management committee to the executives heading up the new units will, IBM hopes, enable the $55 billion lumbering giant to expedite product development and react more quickly to customer demands.

The five business units are grouped around key product lines: 370 architecture systems, System/36 and 38 machines, personal systems, communication systems and technology products (see chart below).

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• IBM unveils 3745 communications processor, boosts network control. Page 6.

The executive overseeing each unit will be accountable for product line revenue and profitability and will be responsible for worldwide product development as well as domestic manufacturing.

"I've felt for a long time we needed a more responsive, better organization," IBM Chairman John Akers said during a press briefing at IBM regional

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Lautenbach on Blue streak

BY CLINTON WILDER
CW STAFF

Terry R. Lautenbach's elevation to general manager of IBM United States last week surprised many observers, but his IBM career path has been a familiar one for many of Big Blue's highest ranking executives. And he is Blue to the core, logging nearly 30 of his 49 years in an IBM suit.

Like Chairman John Akers and others, the silver-haired Lautenbach rose through the giant company's marketing ranks to several key management posi-

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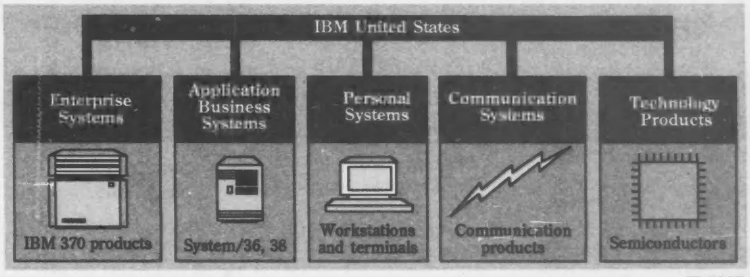
Lined up for business

With reorganization of its U.S. operations, IBM places various product divisions on a par with its mainframe operations



CW CHART

$80M MIS disaster

BY DAVID A. LUDLUM
CW STAFF

SAN FRANCISCO — Bankamerica Corp. is scuttling efforts to use its trouble-prone Masternet institutional trust accounting system, which has been five years in the making and cost an estimated $80 million.

The banking company recently disclosed that it will shift the processing for 95% of its institutional trust accounts — believed to represent about 75% of total transactions — to its Seafirst Corp. subsidiary in Seattle. The transfer will take place in mid-April, according to a letter Bankamerica sent to its clients.

The development appears to bring to a climax an ambitious but ultimately disastrous attempt to deploy a leading-edge information system whose cost was initially pegged at $20 million, according to interviews with industry sources and former Bankamerica employees.

On Jan. 21, Bankamerica revealed that, during last year's fourth quarter, it had set aside

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No-disk Model 50 tested

BY JAMES DALY
CW STAFF

IBM is letting users tinker with a diskless version of its Personal System/2 Model 50 in an apparent effort to fold its proprietary Micro Channel architecture-based machines into a larger networking environment.

The company recently offered the system to customers on a custom-bid basis and may announce it as a full-blown commercial product by next month, according to one early user and an analyst familiar with the machine.

Several users of diskless Model 50 prototypes who were contacted by *Computerworld* said the unit is more reliable, quieter and less expensive than its disk-based counterpart.

MIS gains control

The diskless Model 50 also allows MIS organizations to control the data and applications that end users access from a host computer. The new model uses programmable read-only memory to tap into a local-area network through a file server, which serves as a central repository for software.

"As soon as I can get my

Continued on page 14

Tower line fortified

BY ALAN ALPER
CW STAFF

NEW YORK — NCR Corp. broadened the scope of its Tower family of multiuser Unix-based systems last week by unveiling low- and high-end systems as well as two mid-range members of the series.

At the same time, the company embellished the networking options it offers with the Tower machines. NCR introduced a file server that lets Microsoft Corp. MS-DOS-based microcomputers on a local-area network access Tower applications; a token-ring controller and Netbios; and a Transmission Control Protocol/Internet Protocol interface.

The high-end Tower 32/850, designed around the 32-bit 25-MHz Motorola, Inc. 68020 mi-

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NEWSSTAND
SECOND CLASS

IN THIS ISSUE

Power trip. The focus is on mainframes as IBM unveils the 3745, claiming price and network support advantages over the earlier 3725; Alliant turns up the heat with powerful FX/8 replacements; NAS ups AS/VL storage capacities to IBM 3090 levels; and Unisys cuts 1100/90 prices and announces low-cost enhancements to the mainframe line. Pages 6, 8, 14.

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GAO finds NYSE systems guilty in market crash

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C.— Stock exchange computer systems were unable to handle the tremendous volume of transactions attempted during the stock market crash last October, according to a federal agency.

In a preliminary report and testimony to a congressional panel, the U.S. General Accounting Office (GAO) suggested that regulators such as the Securities and Exchange Commission should play a role in encouraging the stock exchanges to upgrade the capacity of the systems.

Problems arose in several markets, the auditors reported, but were typified by the capacity constraints in the card printers on the floor of the New York Stock Exchange (NYSE). "As these printers became overloaded, the delays backed up into other segments of the system and then reverberated through other markets as well," the report said.

On Oct. 19, the day the Dow Jones industrial average plummeted 508 points, orders for 396 million shares were entered into the NYSE's automated transaction system — an unprecedented amount of traffic.

NYSE officials have acknowledged the problems and plan to upgrade the capacity of the systems.

A similar report compiled by the Presidential Task Force on Market Mechanisms, known as the Brady Commission, said the bottleneck resulted from a device controller through which all orders are transmitted to the printers. The controller has a capacity of 68 messages per second, which was exceeded by peak volume of 72 messages per second Oct. 19.

"The floor printers, which have a capacity of 10 to 12 printouts per minute, were overwhelmed at times," the report said. The delays meant that market orders were executed at prices very different from those in effect when the orders were entered, the commission said.

HP rolls out ink-jet printer

Laser-quality unit designed for desktop users

BY JAMES A. MARTIN
CW STAFF

VANCOUVER, Wash. — Hewlett-Packard Co. last week introduced a desktop thermal ink-jet printer said to offer laser-quality text and graphics for less than $1,000.

The Deskjet printer, set for immediate availability, is aimed at capturing a portion of the high-end dot matrix printer market and was not designed to compete with more expensive laser printers such as HP's Laserjet II, according to Thomas R. Braun, manager of HP's research and development section.

The Deskjet reportedly is best suited for individual use, handling sophisticated word processing print jobs that incorporate graphics. The printer was not designed to handle the volumes associated with large desktop publishing or network shared-peripherals requirements, Braun added.

HP's latest printer offering is "a viable alternative to the 24-wire printer technology," said Gary Jensen, a senior industry analyst for Dataquest, Inc. "Customers want laser-quality print, and they are not particularly concerned about the technology used to produce it as long as it's as reliable as dot matrix, quiet, produces true laser-like output and is competitively priced," he added.

The Deskjet is HP's fifth printer introduction in the last 11 months, Jensen said. "They are becoming a significant, if not dominant, player in the market," he added.

Specifications outlined

Deskjet reportedly prints 120 char./sec. in letter-quality mode and 240 char./sec. in draft mode. The output speed is said to be 2 page/min, compared with 8 page/min on the Laserjet II and other laser printers. Text resolution is 300 by 30 dot/in., which is roughly equal to that of the Laserjet II.

The printer includes courier fonts and, with the use of snap-in cartridges, can support up to 32 different fonts. It is compatible with most HP Laserjet printer-supported software packages via the HP Printer Command Language.

The Deskjet works with IBM Personal Computers and compatibles and IBM Personal System/2 models. It also works with HP's Vectra, Touchscreen, Portable Plus and HP 1000, 3000 and 9000 series departmental systems.

Retailing at $995, the Deskjet supports a dual-interface RS-232 and Genicom Corp.'s Centronics parallel interface.

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Prime succeeds in Computervision takeover

Transition task force to address product, personnel redundancy

BY ROSEMARY HAMILTON
CW STAFF

Prime Computer, Inc. and Computervision Corp. put aside their weapons last week and began the arduous task of blending the two companies into a single entity.

The two Massachusetts firms signed a Plan of Merger agreement last Thursday that will make Computervision, a computer-aided design and manufacturing (CAD/CAM) systems supplier, a division of minicomputer maker Prime.

Both users and industry analysts expressed support for the deal, as they had when Prime announced its intentions to acquire Computervision in late December.

"It certainly points out that [Prime is] committed to CAD/CAM," said Steven Felton, director of computer services at The Ryan Group, an architectural firm based in Middletown, N.J., that uses Prime equipment.

Final offer

Prime will purchase Computervision's outstanding stock at $15 per share, which was the second and final offer Prime made in January.

Both companies said that they could not provide details of how Computervision will be brought under the Prime corporate umbrella.

The merger was seen by many as indicative of the inevitable consolidation in the CAD/CAM arena.

"I'm realistic enough now to know that to be a world leader, you have to be much bigger than Computervision is now," said Phillipe Villers, co-founder of Computervision and now president of Cognition, Inc.

CEO Henson plans team

In an interview last week, Prime Chief Executive Officer Joe M. Henson said he intends to set up transition team that will oversee a number of task forces, which, in turn, will address both staffing and product questions.

"This is a good fit that makes sense," said Robert Herwick, a technology analyst with Hambrecht & Quist, Inc. "I think the deal is a steal. Henson should be congratulated."

Henson said he expects Robert L. Gable, CEO of Computervision, to join him in overseeing the transition team.

Asked if Gable will remain with the new company, Henson said he hoped so. However, he could not say if Gable would be selected to lead the Computervision division.

Industry observers, on the other hand, said they expect Gable to resign.

"I don't think Henson and Gable will work at the same company for a long time," said Craig Symons, an analyst with the Gartner Group, Inc. in Stamford, Conn.

Layoffs possible

Henson also did not rule out the possibility of layoffs.

"We want to treat the employees fairly," he said. "We're hoping that the areas of redundancy are handled by attrition, but that's no guarantee. It's logical that there will be duplication and elimination of job posts. But that doesn't necessarily mean layoffs."

Henson said the task forces will address the product areas in which both companies currently have offerings.

In CAD/CAM software, for instance, both companies sell a version of Medusa, a product that was originally developed by Cambridge Interactive Systems Ltd. (CIS) in Cambridge, England.

In the U.S., Prime was the first to be licensed to market Medusa. Computervision subsequently bought CIS and began marketing Medusa as well. Analysts speculated that the two Medusas will be slowly merged and that customers will eventually have one Medusa available to them.

Workstation overlap

Another product area in which there is potential overlap is CAD/CAM workstations.

Computervision sells its Cadds 4X software on a customized Sun Microsystems, Inc. platform.

Prime, meanwhile, has deals in the works with both Sun and Silicon Graphics, Inc.

Prime and Computervision began negotiating early last week after nearly a month of hostility.

But while the two companies were involved in various legal maneuvers, industry observers were saying it was just a matter of time.

"It was inevitable," commented Symons of the Gartner Group. "These deals are purely financial, not technical synergy or anything else."

At A Glance

	Prime	Computervision
Headquarters:	Natick, Mass.	Bedford, Mass.
Founded:	1972	1969
Revenue:	$960.9 million (year-end 1987)	$564 million (year-end 1987)
Profit:	$64.8 million	$19.5 million
Products:	50 Series minicomputers	Caddstation, a CAD/CAM* workstation
Employees:	8,600	4,700
Chief executive officer:	Joe M. Henson	Robert L. Gable

* Computer-aided design and manufacturing

CW CHART

Tower

FROM PAGE 1

croprocessor, supports 512 users, four times as many as the Tower 32/800, NCR said.

With expanded networking support, the high-end Tower should enhance NCR's competitiveness in departmental computing while bolstering its presence in branch processing and small business systems markets, analysts said.

A real performer

"You can't get this much performance from a traditional minicomputer," analyst Louis Giglio of Bear, Stearns & Co. said of the high-end Tower.

"Companies like Wang with their proprietary operating systems have a hard time improving the performance of their software as fast as increasing the performance of their hardware. This shows that NCR's Unix strategy has been a good one," Giglio said.

NCR estimated that the installed base of Tower machines is 50,000.

John Duritsch, assistant vice-president of NCR's computer systems division said the Tower's popularity revolves around the series' modular expansion capabilities and object code compatibility, which allows applications to run on all family members.

Supports more processors

The Tower 32/850 can support six 68020-based application processors, each with 8M to 16M bytes of memory, which is two more than the Tower 32/800 supports.

A new file I/O subsystem with 2M bytes of memory was designed to overcome the small-byte-record problems that plagued early production models of the 32/800 [CW, Aug. 31].

The Tower 32/850 has 40K bytes of cache and a floating-point processor and supports five internal 380M-byte disk drives. Slated for availability in the third quarter, the system lists for $106,175.

The mid-range Tower 32/450 and 32/650 feature 25-MHz 68020s, 32K bytes of cache and 50% more performance than the Tower 32/400 and 32/600, NCR said.

A mass-storage controller supports 179M- and 380M-byte fixed drives and a 150M-byte cartridge tape drive. A 16-channel serial I/O controller enables the Tower 32/450 to support 32 users, twice that of its predecessor, and lets the 32/650 support 64 users, 16 more than the 32/600 supports.

> "You can't get this much performance from a traditional minicomputer."
>
> LOUIS GIGLIO
> BEAR, STEARNS & CO.

The Tower 32/450 lists for $15,565, and the 32/650 is priced at $24,915. Both systems will be available in June, NCR said.

The older 32/400 and 32/600 can be upgraded by swapping processors and storage controllers, NCR noted.

The low end

The low-end Tower 32/200 extends 16.67-MHz 68020 technology to a system supporting four users and networked microcomputers.

The single-board system comes with 1M to 8M bytes of memory and supports 25M-, 51M- or 100M-byte 3½-in. disk drives and a 150M-byte cartridge tape drive.

The 32/200 lists for $5,445 and is scheduled for April delivery.

The NCR File Server lists for $1,230 and should be available in the third quarter. The NCR Token-Ring Controller and NCR Token-Ring Netbios, enabling a Tower to connect to a Token-Ring LAN, list for $2,195 and $530, respectively, and are set to be available in the second quarter.

The TCP/IP connection will also be available in the second quarter, according to the firm.

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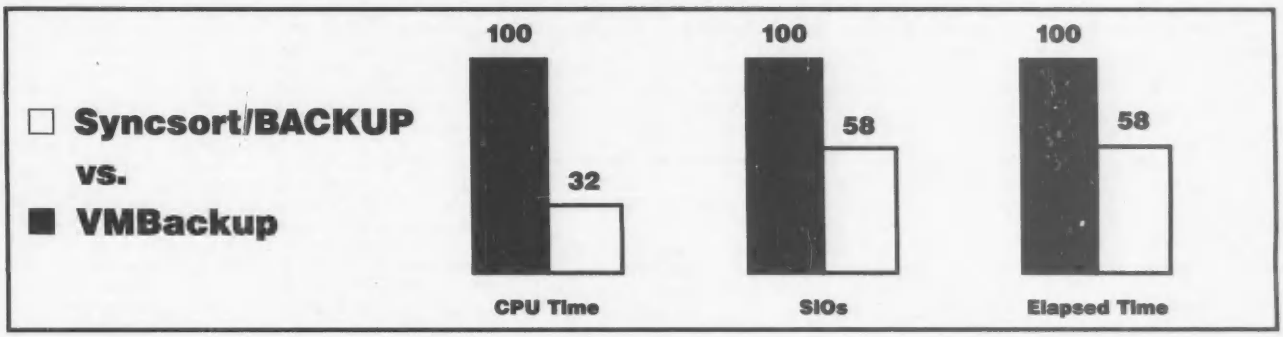

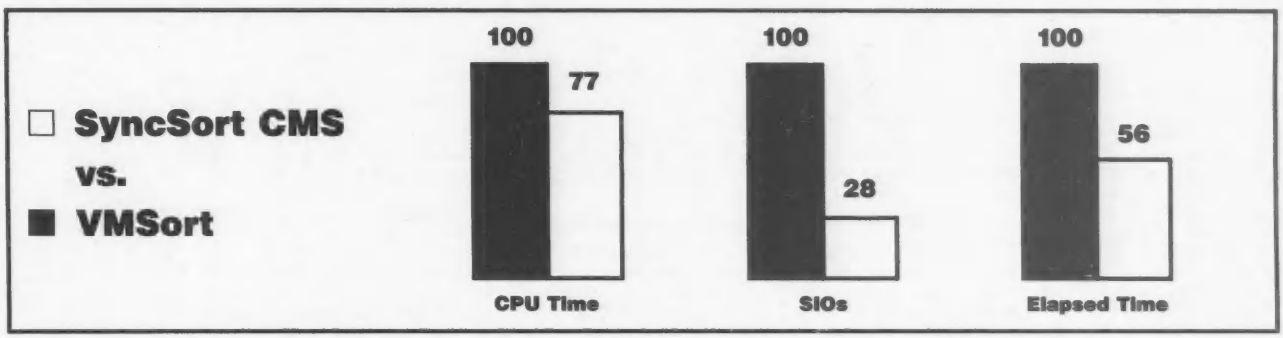

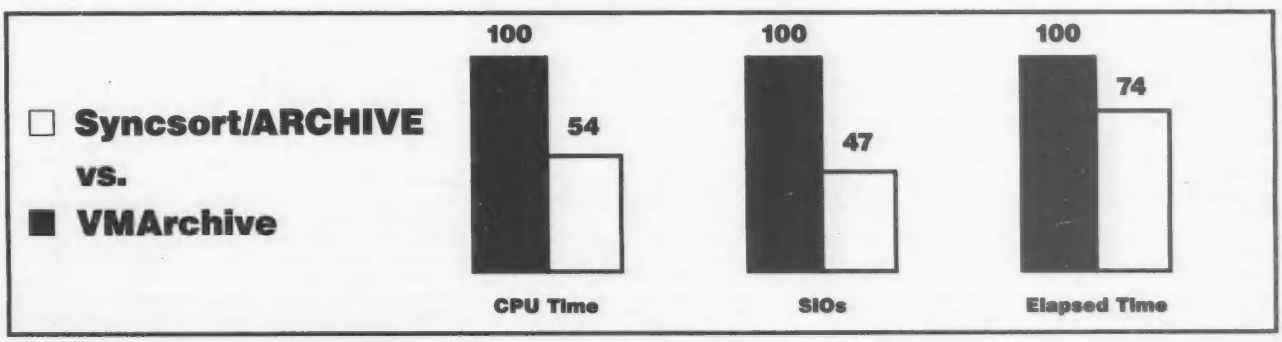

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IBM surpasses 3725 line with 3745

Processor strengthens firm's support for distributed networking scheme

BY ELISABETH HORWITT
CW STAFF

WASHINGTON, D.C. — IBM last week strengthened the ability of its communications processors to support its unfolding distributed networking scheme.

The company announced a long-expected addition to its communications processor family that reportedly packs four times the punch of the existing 3725.

IBM also brought out enhanced versions of the Advanced Communications Function/Network Control Program (ACF/NCP) software that it said adds greater flexibility and peer-to-peer networking to its communications processors. One eagerly awaited feature is dynamic network reconfiguration, which lets users add or delete communications processors, hosts or lines without having to take down the IBM Systems Network Architecture (SNA) network.

The 3745 eliminates several long-standing limitations of the earlier 3725 high-end model and provides far more cost-effective communications processing power, according to IBM.

Among the reported advantages are the following:

- Support of up to 16 host channel connections, compared with six for the 3725.
- Support of up to eight active T1 links, instead of just one. This can eliminate for some companies the need to install an additional box, such as IBM's 3737 or Network System Corp.'s Hyperchannel, to handle high-speed communications between hosts, said Robert Graham, vice-president and manager of the IBM Systems Support group at Bankers Trust Co. in New York.
- Backup capabilities are provided by the second processing unit, which can be automatically activated by a network alert sent to the Netview network management system, according to Donald Casey, vice-president for hardware development at IBM's Communication Products Division.

The 3745's superior processing power also makes it a far more viable gateway between hosts and IBM Token-Ring networks, IBM and industry sources agreed. Users and analysts have complained that the 3725 bogs down as a conduit between a host and a rapidly growing local-area network.

In contrast, the 3745 "can certainly achieve a 1M bit/sec. throughput" either as a gateway between a LAN and a host or between multiple LANs, Casey said, thereby indicating that IBM envisions the device as a high-speed LAN-to-LAN bridge.

IBM's new ACF/NCP releases will allow IBM communications processors to deliver several low-entry networking features that the vendor announced last June, according to Ellen Hancock, vice-president of IBM's Communication Products Division. The new Version 5 supports the 3745 and existing 3720 processors; the enhanced Version 4, Release 3 supports the 3725. Enhancements include the following:

- Support of IBM's SNA 2.1, so devices running the peer-to-peer networking protocol can communicate across an SNA backbone of processors without having to go through the host for each interaction.
- Dynamic network configuration and updates of SNA tables without the need to interrupt network operations.
- Multidrop networking, which allows multiple communications processors to share the same dedicated line.

The one-processor 3745 Model 210 is scheduled to ship in March, with prices beginning at $125,000. The dual-processor Model 410 costs up to $1.3 million for a top-of-the-line model.

Scheduled for shipment beginning in September, ACF/NCP Version 4, Release 3 has an initial license charge of $2,085. One-time charges for ACF/NCP Version 5 range from $14,400 to $72,000, depending on the system. Version 5, Release 1 began shipping last week, with other releases planned for later this year.

Increased availability for the 3745 will be crucial if it becomes a backbone system supporting peer-to-peer connections between IBM and non-IBM devices, rather than just a front end attached to a single host, according to Thomas Nolle, president of Haddonfield, N.J., consulting firm CIMI Corp.

One way that IBM has fitted the 3745 for the role described above is by adding support for the device to its SNA X.25 Interconnection, a program that allows an SNA backbone of communications controllers to support X.25 packet-switching communications between both IBM and non-IBM devices, Casey said.

Of particular interest to Bankers Trust's Graham was IBM's introduction of the Network Asset Management program, which allows IBM cluster controllers to send to a host data base information about serial number, machine type and port number of all attached devices.

The program reportedly will be available without charge as an enhancement to the IBM 3174 Subsystem Control Unit Configuration in the second half of this year.

Front of the line

IBM's 3745 communications processor cuts into some advantages that NCR Comten's 5660 has over the older IBM 3725

	IBM 3745 Model 410	IBM 3725 Model 1	NCR Comten 5660
Maximum number of lines	512	256	1,024
Maximum number of concurrently active T1 lines	8	1	2 to 3
Maximum main storage	8M bytes	3M bytes	16M bytes
Maximum number of internal processors	2	1	1
Maximum number of token-ring connections	8	8	None
ACF/NCP*	Version 5, Releases 1, 2	Version 4, Release 3	Version 4, Release 2
Base price	$188,000	$299,940	$310,000

* IBM Advanced Communications Function/Network Control Program

CW CHART

IBM's System/88 line enhanced by Stratus

BY ALAN ALPER
CW STAFF

NEW YORK — Following its OEM supplier's lead, IBM last week unveiled two entry-level members of its System/88 fault-tolerant systems family and a new I/O subsystem, featuring programmable communications adapters to support specialized protocols.

Supplied by Stratus Computer, Inc., the new System/88s are aimed at customers who need high-availability systems for smaller on-line transaction processing loads, IBM officials said.

Other than IBM packaging and minor specification changes relating to printer support and use of an IBM microcomputer as a console, the new System/88s are essentially identical to the processors unveiled recently by Stratus [CW, Jan. 25], noted William Osborne, fault-tolerant systems manager of IBM's Communication Products Division.

Supports 40 ports

The IBM 4578 comes in 8M- and 16M-byte configurations, with four duplexed Motorola, Inc. 68010 microprocessors, and can support one I/O processor and 40 communications ports.

They reportedly offer comparable performance at lower prices than the existing entry-level 4576 Model 81 and are packaged in smaller 36-in. high cabinets. The two processors are priced at $50,300 and $83,000, respectively, IBM said.

The 4579 is being offered in four models: two 8M-byte and two 16M-byte configurations, with support for up to 96 communications ports. The configurations are differentiated by processor speed; two are powered by four duplexed 68010 microprocessors, the other two by four duplexed 68020s.

Packaged in 54-in. cabinets, all 4579s, save the 68010-based, 8M-byte version, reportedly can support an additional I/O processor. The processors range in price from $83,000 to $109,000, IBM said.

The new processors are scheduled for availability in the fourth quarter and reportedly will be accompanied by Release 5 of the System/88 OS operating system. The 4578 and 4579 can be upgraded within processor class but not to current family members, IBM noted.

The new I/O subsystem, containing 16 slots, attaches to all System/88 family members. It supports RS-232, 422 and 423 communications and can be modified by customers who need to attach devices with unique protocols, IBM said.

Available in fourth quarter

Slated for availability in the fourth quarter, the subsystem lists for $11,000.

IBM also rolled out new 8-in. direct-access storage devices with capacities of 151M, 320M and 781M bytes for the entire System/88 family. Offering 3½ times more capacity than was available previously, the drives are priced at $10,600, $15,200 and $25,200, respectively.

The 151M- and 781M-byte drives will be available in the second quarter, while the 320M-byte drive is set to ship in the third quarter, IBM said.

Phoenix's BIOS to run on Dell PCs

BY ED SCANNELL
CW STAFF

AUSTIN, Texas — Dell Computer Corp. and Phoenix Technologies Ltd. this week will announce that they have agreed to jointly develop a series of BIOS products for Dell's existing line of IBM-compatible systems and for an IBM Personal System/2-compatible system, sources said.

Dell will not retrofit Phoenix's BIOS for people now using Dell's IBM Personal Computer AT- and XT-compatible systems; rather, the company will ship the BIOS with all of its new AT- and XT-compatible systems, starting with the Intel Corp. 80286-based System 200. A Dell spokesman declined to say specifically why the company has decided to switch from its own to Phoenix's BIOS.

"WE HAVEN'T been getting a lot of demand for Micro Channel systems."

JOHN ELLETT
DELL COMPUTER CORP.

"We have always strived for highly compatible machines and, for various reasons, have decided to go with Phoenix on the System 200," said John Ellett, a program manager at Dell.

Asked about plans to develop a BIOS for IBM's PS/2 series, Ellett and a Phoenix spokesman declined to comment. "We haven't been getting a lot of demand for Micro Channel systems," Ellett said. "What we have seen is [demand for] the optional 3½-in. drive, IBM Video Graphics Array compatibility and OS/2 compatibility. So that is what we did with the System 200."

Dell will wait until there seems to be sufficient demand from customers before it commits to developing an IBM Micro Channel architecture product, Ellett said.

Dell uses chip sets from Western Digital Corp. in its existing line of systems. Western Digital is one of two chip makers that have announced chip sets that allow systems manufacturers to put together a Micro Channel work-alike.

Dell and Phoenix have been working together for several months, according to one source.

Limits temper corporate OS/2 plans

BY STEPHEN JONES
CW STAFF

IBM's OS/2 Standard Edition Release 1.0 still appears to be more of a technical curiosity than an operating system workhorse and is likely to remain an outsider in MIS circles, according to users contacted by *Computerworld* last week.

Reports of compatibility problems with some existing hardware and software and a lack of OS/2-specific applications have led many MIS shops to buy only one or two copies of the package. Few have plans for widespread implementation.

Among MIS managers, however, interest in OS/2 shows no signs of flagging, and early limitations are not changing corporate purchasing plans for the graphics-based Presentation Manager version of OS/2 expected in the fall.

It's not in there

"Most of the technical people in the company will work with it, but we're in no rush to embrace OS/2," said Phillip Gordon, manager of office systems at Charles Schwab & Co. in San Francisco.

"There is nothing inherent in OS/2 that users can take advantage of," said Amy Wohl, president of Wohl Associates, a Bala Cynwyd, Pa., consulting firm, said it took her staff and a battery of technical engineers from a local dealer four days to install Standard Edition 1.0 on an IBM Personal System/2 Model 60. An incompatible mouse driver was finally identified as the source of the problem.

Wohl said such difficulties will be hard to avoid until additional support staff in the dealer channel becomes more familiar with the operating system.

"It's the usual breaking-in period. But OS/2 is complicated enough that the breaking in will take longer than it should," she said.

Schwab was forced to sit on its copy of OS/2 for a month because the PS/2 Models 50 and 60 did not have the 2M bytes of memory needed to support the system, Gordon said. The company only recently installed an IBM memory card on one of its PCs to handle the OS/2 load.

Lack of communication

The inherent limitations of the product have slowed its acceptance in other MIS shops as well.

The Travelers Corp. in Hartford, Conn., opted to keep Standard Edition 1.0 off of its approved product list because it cannot support communications and network products, such as those that run under IBM's Token-Ring network.

"It can't be a product for us now because of the lack of communications support," said Ron Calabrese, a software manager for The Travelers.

Microsoft and IBM are quick to point out that most of these problems will be resolved in later releases, such as Extended Edition.

Developers admit that OS/2 takes longer to install than DOS because of its increased functionality, but some users said OS/2 is easier to boot than its predecessor. Calabrese said the system almost boots itself through a partially automated loading procedure.

> "WE haven't figured out what we'll do with it yet."
>
> RICK HEIDEN
> GENERAL ELECTRIC CO.

Rick Heiden, a software engineer in General Electric Co.'s Corporate Information Technology Group. "We haven't figured out what we'll do with it yet."

Heiden said his group is more interested in getting its hands on the Presentation Manager. While GE has 40,000 personal computers, Heiden's group has bought only two copies of OS/2.

Even Microsoft Corp., which co-developed OS/2, seems to have trouble mustering much zeal over the system.

"OS/2 1.0 will be [made] obsolete by 1.1 Presentation Manager — that will be the real base for the next generation of personal computing," said Mark Mackaman, Microsoft's OS/2 product manager.

On the slipcase of OS/2 Standard Edition 1.0, IBM states that it will not support the product after Jan. 15, 1989, apparently turning its attention to Standard Edition 1.1 and Extended Edition 1.0, both of which are slated to ship before that date.

This does not seem to be stopping users from at least trying their hand at the product. John McCarthy, a consultant with Forrester Research, Inc. in Cambridge, Mass., estimated that 235,000 copies of OS/2 will be sold this year. Only 10% of those will include the Presentation Manager.

Some users who have tried OS/2 related a variety of mishaps.

Incompatibility with existing hardware and software is one of the greatest obstacles. Non-IBM add-in boards, incompatible mice and printers and nondocumented software programs have caused some of the biggest problems.

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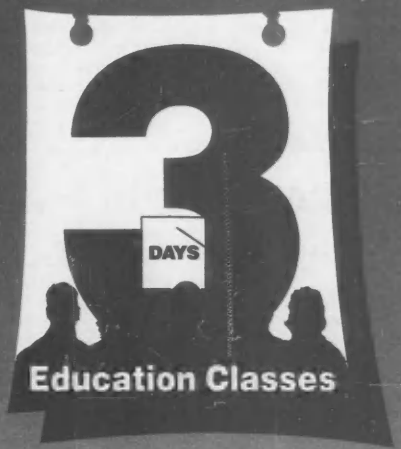

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Users ahead of Apple-DEC deal

BY JULIE PITTA
CW STAFF

MIS users already connecting Apple Computer, Inc.'s Macintosh personal computers to Digital Equipment Corp.'s VAX minicomputers appear unimpressed by Apple and DEC's recently announced alliance.

The companies' agreement to jointly develop products allowing Macintoshes to communicate more efficiently with VAXs merely represents the recognition of an existing phenomenon, users said. Further, they added, a few pieces are missing in the Mac-to-VAX puzzle.

"We've been connecting Macintoshes to a lot of things: VAXs, IBM mainframes and Crays," said W. R. Magnor, program analyst for Chevron Corp.'s field research department. "Connecting Macs to VAXs is easy with asynchronous terminal links. I really haven't heard much concrete about the DEC-Apple deal. It needs more meat."

Message to MIS

Apple officials said the companies' new relationship sends an important message to MIS. "It's a reflection that Apple wants to work with MIS people," said George Everhart, Apple's director of corporate marketing. "One of the major catalysts was our customer base. They kept asking us, 'When are you going to do something?' "

As a vehicle into MIS, Apple has been targeting DEC accounts, a realization by the company that many MIS directors have been opting for Macintoshes as terminals to their VAXs. According to the Gartner Group, Inc., between 20% and 30% of all micros installed near VAXs are Macintoshes.

Fueling the Mac-to-VAX debate have been DEC's failure in the personal computer market and the relative ease with which Macintoshes can communicate with VAXs. Third parties have responded with communications products facilitating the link.

A lack of specifics — products have yet to be announced — appears to be troubling some users. Apple and DEC have promised that more details will be offered at a developers' meeting scheduled for August.

"I've yet to have any DEC salesman ever recommend anything but a DEC product to me," said Bo Pitser, MIS director for the Lawrence Livermore National Laboratory. "Apple's Mac and DEC's Vaxmate II are competing products. If one of them disappears, you might actually convince me that an alliance exists."

Purchases on hold

One MIS user said he will hold off purchasing any third-party products for Mac-to-VAX connections until DEC and Apple's August announcements. "It could change everything out there," said Mark Goldenberg, Apple support coordinator at Hughes Aircraft Co.'s Buena Park, Calif., facility.

Apple officials have said they have no plans to disrupt the installed base of Macintosh and DEC users.

Goldenberg's group has been connecting Macintoshes to VAXs for about two years using a number of different third-party products. "They're all about the same in terms of functionality," he said.

Even without specific products, the liaison may serve as a political tool for MIS professionals eager to bring Macintoshes into their shops. "The most important thing about this announcement is that it happened," said Daniel Chevitz, president of Odesta Corp., developer of the widely used Helix Mac-to-VAX connection product. "It makes a political difference. It helps the people who have been trying to put together answers to problems and then got hit with political and religious pressures from their bosses. It takes away the lingering fear and doubt."

Mac links steal desktop show

ANAHEIM, Calif. — Communications products for Apple Computer, Inc.'s Macintosh personal computer dominated the exhibitions at last week's Desktop Communications Conference, co-sponsored by Infonetics, Inc. and Andrew Seybold's "Outlook on Professional Computing" newsletter.

Products shown ranged from electronic mail systems for Mac-based local-area networks to connections allowing Macintoshes to communicate with larger systems. Apple and Digital Equipment Corp., fresh from the announcement of their intent to co-develop products allowing more efficient connections of Macintoshes to DEC's VAX minicomputers, had dominant floor space.

Apple Chairman and Chief Executive Officer John Sculley said DEC and Apple's relationship will fuel an important third-party industry. If the Desktop Communications Conference is any indicator, third parties apparently agree. The following are among the announcements made at the show:

- 3Com Corp. introduced an Ethernet adapter for Apple's Motorola, Inc. 68020-based Macintosh II that allows the microcomputer to be used in a 10M bit/sec. Ethernet network. Called the Etherlink/NB and priced at $595, the adapter is designed for use with 3Com's 3+ networking software.
- Infosphere, Inc. introduced Taskteam, a communications software package allowing Mac users in remote locations to access Apple's Appletalk and Ethertalk networks. Once connected, users can share all network services, including E-mail, file servers and printers. Called Liaison and priced at $195, the product allows portions of the network to be kept off-limits to remote users for security purposes.
- Dayna Communications, Inc. in Salt Lake City unveiled Daynamail, an E-mail software program scheduled for availability this spring in both Macintosh and Microsoft Corp. MS-DOS versions. Daynamail is the outcome of an agreement between Dayna and Action Technology, Inc.

JULIE PITTA

Sculley expects 30% increase in '88 earnings

CUPERTINO, Calif. — Apple Computer, Inc. last week predicted a rosy year for the computer industry in general and Apple in particular despite some Wall Street watchers' warnings of a recession.

At the company's annual meeting, Apple Chairman and Chief Executive Officer John Sculley projected that computer industry sales will increase by 30% during 1988, up from a forecast of 25% for last year. Additionally, Sculley said Apple's revenue will grow by between 30% and 40%.

Sculley told a separate gathering of Wall Street analysts a day earlier that 1987 was a year of new systems for Apple but that 1988 will be one of peripherals, especially communications products.

However, he said Apple expects to introduce a mid-range Macintosh, positioned between the $4,000 Macintosh SE and the $10,000 Macintosh II. The new system, which Sculley characterized as a low-end Mac II, is set for a launch during the second half of this year. Pricing will be in the $5,000 to $6,000 range.

Wall Street analysts said they were pleased with Apple's projections. "The company has done extremely well, and it's much more balanced at this point," said Bruce Lupatkin, an analyst for Hambrecht & Quist, Inc. "But there's much more to achieve. They haven't penetrated business to the degree that people seem to think."

Unisys lowers entry-level threshold

BY STANLEY GIBSON
CW STAFF

BLUE BELL, Pa. — Unisys Corp. last week announced two entry-level systems, the 1100/91 and 1100/92 Model II SV processors, which offer the same performance but reduce the cost of the machines they replace by 18% to 26%, according to Unisys.

Unisys also cut prices by 10% on all other processors in the 1100/90 Model II series.

The announcement completes the enhancement of the 1100/90 product line that began last summer when Unisys quietly introduced the 1100/90 Model IIs, which replaced previous 1100/90 processors. In the fall of 1987, Unisys announced the 1100/94 Model II Turbo, a high-end model.

The SV versions of the 1100/91 and 1100/92 were introduced in July 1985 as lower priced, lower performance versions of the 1100/91 and 1100/92 models.

Development on the former Sperry Corp. 1100/90 line had been held up during the last year by uncertainties resulting from the merger of Sperry with Burroughs Corp., according to George Lindamood, a Unisys analyst at the Gartner Group, Inc. in Stamford, Conn.

But with corporate conflicts now resolved, Unisys may be able to catch up to IBM in the next few years with the 1100/90 series, he said. "However, they are not there yet," Lindamood said.

Same for less

The 1100/91 Model II SV is a single-processor system that comes in 8M-byte or 16M-byte memory units. It is priced at $1,429,000, including operator console and operating system software. Unisys said the price is 26% less than the comparable entry-level 1100/91 SV model introduced in 1985.

The dual-processor 1100/92 Model II SV is priced at $2,605,000, an 18% reduction over its earlier SV counterpart. The 1100/92 comes with two 16M-byte memory subsystems, the vendor said.

The new systems are object-code compatible with all current 1100 series and 2200/200 systems and allow users to move to larger systems without converting software, the vendor claimed.

Both systems use 256K-bit random-access memory chips, replacing the 64K-bit chips used in their predecessors.

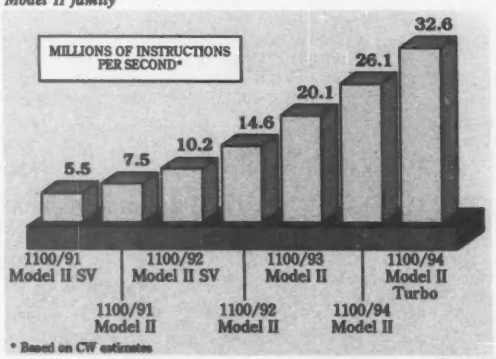
In addition, Unisys announced the Personal Workstation 2 (PW2) operator console, an IBM-compatible personal computer that can replace the Unisys UTS 60 dumb terminal as the operator console for an 1100/90 system.

The PW2 comes with 640K bytes of memory, a 1.2M-byte floppy disk drive, a 20M-byte hard disk, color console and printer. The console assembly with the PW2 is priced at $37,500, the same price as the dumb terminal configuration.

The products are available for immediate delivery, Unisys said.

Plugging the gaps

Introduction of SV models fills out the low end of Unisys's 1100/90 Model II family



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Banyan lays out a blueprint for OS/2

BY PATRICIA KEEFE
CW STAFF

WESTBORO, Mass. — Banyan Systems, Inc., which prides itself on tying together multivendor environments, is extending its reach by adding OS/2 support.

Last week, Banyan detailed a two-phase plan to integrate OS/2 Standard and Extended Editions support into its AT&T Unix System V-based Virtual Networking Software (Vines) operating system.

None of this support will be delivered until the first half of 1989. The delivery schedule for OS/2 applications stretches from late this year to late 1989.

The first phase of Banyan's OS/2 implementation is slated to be available in early 1989. It will include support for OS/2 print-spooling and file and device sharing; user and system administration features; IBM's Netbios; a distributed applications platform supporting OS/2 as a client and Unix on the server; and basic communications services such as IBM's Systems Network Architecture/3270 and asynchronous terminal emulation.

Banyan said the second phase, slated for mid-1989, will include support for a distributed applications platform for OS/2 clients and servers and additional communications services, such as CCITT X.25 and Transmission Control Protocol/Internet Protocol.

Analysts said that adding support for OS/2, SQL and evolving IBM protocols strengthens Banyan's position as a corporate communications provider.

Vines will be available companywide before IBM's Systems Application Architecture and will tie in many more local-area networks than Digital Equipment Corp.'s Decnet Ethernet, predicted Andrew Seybold's "Outlook on Professional Computing," an industry newsletter.

As outlined last week, Banyan's strategy echoes somewhat that of Novell, Inc., which unveiled its plans in December. Along with 3Com Corp., these vendors' proprietary network operating systems are threatened by OS/2, which supports distributed applications in a multiuser, multitasking mode.

While 3Com will incorporate Microsoft Corp.'s OS/2 LAN Manager into its software, Banyan and Novell will support OS/2 as an application server.

Novell link opens SNA gate

BY PATRICIA KEEFE
CW STAFF

PROVO, Utah — Novell, Inc. supplied a critical component of its plan to support enterprisewide networking with the announcement last week of Netware LU6.2.

The IBM LU6.2 gateway will tie Novell Netware local-area networks to IBM hosts by providing the ability to invoke peer-to-peer networking under IBM's Systems Network Architecture (SNA).

"Every major vendor is implementing a version of LU6.2," said Darrell Miller, Novell's vice-president of corporate marketing. He likened the importance of LU6.2 to that of standards such as Open Systems Interconnect and Transmission Control Protocol/Internet Protocol.

Medium of transportation

A strategic component of IBM's Systems Application Architecture (SAA), the LU6.2 protocol provides peer-to-peer connectivity across IBM systems. LU6.2 functions as the transport mechanism for applications using the as-yet-unreleased Enhanced Connectivity Facility under SAA.

Netware LU6.2 will reportedly provide Netware users with similar support while allowing them to run IBM 3270 and LU6.2 applications over the same gateway. Novell said it will be fully compatible with IBM's Advanced Program-to-Program Communications/PC, known as APPC/PC.

> "EVERY major vendor is implementing a version of LU6.2."
>
> DARRELL MILLER
> NOVELL, INC.

The LU6.2 gateway is media-independent and is supported on LANs based on Novell's Netware and IBM's Netbios. Most of the LU6.2 overhead is located in the gateway server software, making IBM's PC-DOS a more practical platform for LU6.2 applications, Novell said. Support for IBM and Microsoft Corp.'s OS/2 operating system will be added later this year, Miller said.

Netware LU6.2 will be included with each gateway in Novell's Netware SNA Services product family along with two additions: the Token Ring Gateway and Token Ring Multi, a micro-to-mainframe software package said to support multiple host connections to an IBM Token-Ring network.

The Token Ring Gateway is a direct Token-Ring connection via an IBM 3725 front-end processor or 3174 communications controller. Priced at $550, it provides users with access to up to 128 host sessions at 4M bit/sec.

Token Ring Multi provides access to multiple concurrent host sessions through a Token-Ring direct connection to the host. For $395, personal computer users can have as many as five 3270 mainframe display sessions, up to four printer sessions and one PC-DOS session, Novell said.

Netware LU6.2 will be implemented initially on Token-Ring or coaxial gateway connections via the IBM 3174 Distributed Function Terminal Controller. IBM does not offer APPC over coaxial cable, Miller said. Later support will include Synchronous Data Link Control links.

Novell said Netware LU6.2 developer's kits will be available in March and that Netware SNA Services and Netware LU6.2 will be available in the second quarter. LU6.2 upgrades for existing gateways cost $100.

MIS disaster

FROM PAGE 1

$35 million to cover expenses arising from Masternet, following a second-quarter reserve of $25 million. The reserves cover costs such as delayed interest payments, waived fees, additional manpower and hardware.

Last October, Bankamerica's systems chief, Louis Mertes, and its top trust executive, Clyde Claus, resigned in moves attributed to Masternet's failure to generate timely statements and other data. That failure has led some institutional trust clients to take their business elsewhere. Bankamerica reports serving as trustee or agent for assets of $34 billion held by about 700 institutions, down from $38 billion for 800 institutions reported last summer.

Layoffs imminent

A Bankamerica spokesman suggested that layoffs may result from the scuttling of Masternet. "Clearly, there will be reductions over time in our trust operations and systems," he said. "We do expect there will be increased efficiencies."

Bankamerica had hoped Masternet would enable it to offer trust data processing services to small and mid-size banks.

Of the Masternet accounts not going to Seafirst, Bankamerica late Friday said 29 "more complex" accounts will be processed by State Street Bank & Trust Co. in Boston, although actual management will remain with Bankamerica.

Trust accounts

Seafirst processes institutional trust accounts remotely on SEI Corp.'s Trust-Aid 3000 system at SEI's headquarters in Wayne, Pa., according to an SEI spokesman. The system was designed 15 years ago but was upgraded last summer to run on an IBM 3090 Model 400.

For at least five years, Bankamerica has been building its Masternet system around the Trust Plus system developed by Premiere Systems, Inc., also in Wayne, which runs on Prime Computer, Inc. processors.

Premiere was founded in 1979 by former SEI employees with financing from Bankamerica, Seafirst, Philadelphia National Bank and Crestar Bank of Virginia. It was founded in an effort to improve on the institutional trust system that SEI then offered, according to a source familiar with the project. Bankamerica is the only firm that has attempted to go on-line with Trust Plus, the source said.

A spokesman for Philadelphia National Bank said his bank is not using Trust Plus but would not elaborate. Crestar officials could not be reached for comment.

In serving as trustees for institutional trusts such as corporate, union and government pension funds, banks track the performance of the independent money managers that make investments for the trusts, settle their trades, collect income from the investments and make payments to beneficiaries.

Bankamerica brought Masternet on-line March 1, 1987, replacing a 20-year-old proprietary batch processing system. In addition to generating monthly statements, Masternet was supposed to provide on-line updating and querying.

However, Masternet failed to maintain current data and fell months behind in generating statements. These difficulties were caused by slow run and response times, communications problems and leaky disk drives, according to a former Bankamerica employee.

Apathy problem

Masternet also suffered a major blow from poor morale at a securities processing unit in Los Angeles that was involved with its development, the source said. In the midst of the conversion, Bankamerica disclosed that it would move the unit from Los Angeles to San Francisco, leading workers there to slack off. "They did not work hard. They went home early," he said. The bank later decided to keep the unit in Los Angeles.

One Bankamerica trust client looking elsewhere for trustee services is the $370 million Southern California Rapid Transit District, whose pension funds could generate about $300,000 a year for Bankamerica.

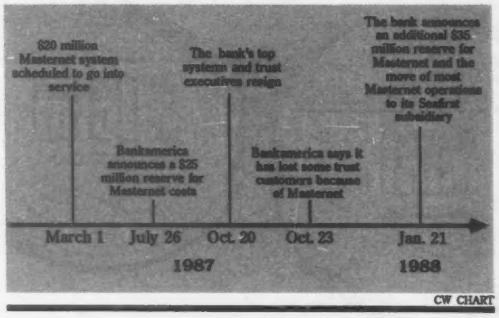
"We have an obligation as fiduciaries to keep everything on an even keel. We haven't lost any money, but it's a great inconvenience not having information," said Edward Paull, pension and benefits manager for the fund.

Bankamerica has appointed Richard V. Fulp, an executive vice-president and head of the trust group at Seafirst, to run its trust department while continuing to head Seafirst's trust unit. Mertes has not been replaced.

A spokesman for the U.S. Comptroller of the Currency declined to comment on a published report that the agency is investigating Bankamerica regarding alleged banking law violations said to be caused by problems with Masternet. In 1984, Bankamerica consented to censure by the agency for its failure to inform customers that it was unable to keep current records of securities transactions as the result of a system conversion.

Masternet's meltdown

Bankamerica's master trust accounting system does not function properly 10 months after the scheduled start-up


$20 million Masternet system scheduled to go into service
Bankamerica announces a $25 million reserve for Masternet costs
The bank's top systems and trust executives resign
Bankamerica says it has lost some trust customers because of Masternet
The bank announces an additional $35 million reserve for Masternet and the move of most Masternet operations to its Seafirst subsidiary
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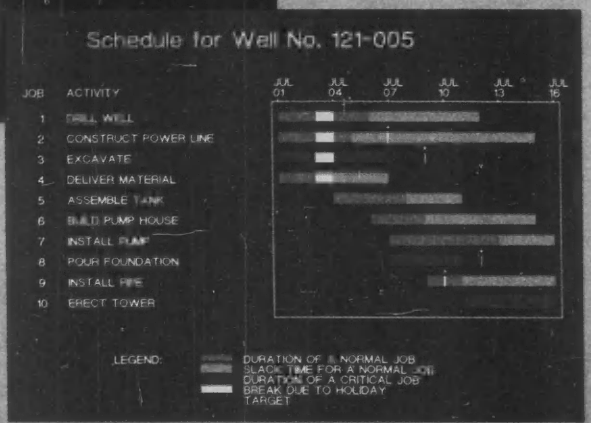

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Alliant doubles speed of high end

BY STANLEY GIBSON
CW STAFF

Alliant Computer Systems Corp. is set to replace its original FX/8 parallel processing minisupercomputer today with two higher powered models, the FX/40 and FX/80. The firm said its second-generation systems offer greater than twice the performance of the FX/8 in some applications.

In the announcement, anticipated by industry observers [CW, Jan. 25], Alliant said it will continue to offer and will drop the price of its FX/1 system from $99,900 to $59,900 for a base configuration. The FX/4 system, announced last fall, remains priced at $99,900.

The new models, priced from $150,000 to $500,000, are said to be fully compatible with Alliant's earlier models and able to use some 100 applications available for the earlier systems.

The heat is on

"The new product generation really turns up the heat on the competitors," said Marcia Brooks, a minisupercomputer analyst at International Data Corp. in Framingham, Mass.

Alliant archrival Convex Computer Corp. has confirmed that it will soon announce a new-generation product of its own. Brooks said Convex's system, like its previous systems, will be compatible with Cray Research, Inc.'s supercomputers.

However, Brooks added that the new system will probably incorporate a parallel architecture similar to Alliant's, instead of Convex's earlier uniprocessor vector architecture.

Adding that she expects Digital Equipment Corp. to announce a minisupercomputer late this year or early next year, Brooks noted, "When DEC unveils its response, the minisupercomputer makers — Alliant included — are going to come under extreme pressure."

Alliant rated the performance of a fully configured eight-CPU FX/80 at 65 million floating-point operations per second (MFLOPS), compared with a maximum of 26 MFLOPS for the earlier eight-CPU FX/8 model. The FX/40 is rated at 30 MFLOPS, compared with 14 MFLOPS for Alliant's FX/4 system.

The $149,000 entry-level price for an FX/40 includes one computational element, one VME-based interactive I/O processor, 32M bytes of main memory expandable to 160M bytes, 1.1G bytes of disk storage and a cartridge tape drive.

The entry-level FX/80 system is priced at $299,000 and includes two computational elements, two VME-based interactive processors, I/O processors, 32M bytes of main memory expandable to 256M bytes, a 16-line multiplexer, 1.1G bytes of disk storage and a magnetic tape drive.

Each additional computational element, rated at a peak of 23.6 MFLOPS, is priced at $59,000.

The systems are available for shipment in the first quarter, Alliant said.

NAS extends expanded storage

Memory feature furthers AS/VL systems' IBM compatibility

BY JAMES CONNOLLY
CW STAFF

SANTA CLARA, Calif. — National Advanced Systems (NAS) last week moved to make its AS/VL mid-range systems more compatible with IBM's 3090s by announcing a feature that lets users partition main memory to look like IBM's expanded storage feature.

The subsidiary of National Semiconductor Corp. also increased the memory limit on the three smaller AS/VL models from 128M bytes to the 256M-byte limit of the high-end AS/VL 80 and raised the maximum number of channels for all models from 24 to 32.

The AS/VL series was announced in Europe in March 1987 and in the U.S. in July 1987 as a competitor to the IBM 4381 and the low end of the 3090 line.

An NAS spokesman said NAS still recommends use of main memory rather than expanded storage but noted that some users want NAS to offer an expanded storage look-alike feature to ensure compatibility where NAS machines and 3090s run in a common environment. He cited the example of using an AS/VL to develop applications to run on larger 3090s.

While IBM's expanded storage feature is a set of memory chips connected by a bus to main memory, NAS's look-alike feature allows the partitioning of main memory. NAS already offered the feature on its larger AS/XL series of mainframes.

Ahead of a trend

An analyst who follows IBM and IBM plug-compatible manufacturers, including NAS, noted that offering the expanded storage capability on the AS/VL series helps NAS prepare for the natural shift of expanded storage to smaller systems.

Francis Gens of International Data Corp. said, "It makes sense in that NAS is already positioning the AS/VL against a 4381 follow-on, which certainly will include expanded storage." Gens observed that early users of expanded storage, which was introduced with the 3090s in 1985, were primarily very large MIS shops. He said that with user experience and continued IBM enhancements, the feature is becoming more useful to small shops and less of a luxury.

NAS said microcode updates to support expanded storage are free of charge. Memory upgrades for the AS/VL cost $207,000 for 32M-byte increments, and eight-channel upgrade packages cost $117,000.

Storage Tech counters IBM DASDs

BY STANLEY GIBSON
CW STAFF

LOUISVILLE, Colo. — Storage Technology Corp. last week responded to IBM's new triple-density 3380 Model J and Model K disk drives with its own triple-density model and offered an upgrade path to the subsystem.

Storage Technology's Model 8380R, capable of storing 7.6G bytes per drive, is set for fourth-quarter availability. Packages to upgrade installed single- or double-density drives — a feature not offered by IBM — will be available in the second quarter of 1989, the vendor said.

"The interesting thing about this announcement is that you can upgrade in the field," said David Vellante, a peripherals analyst at International Data Corp. He said the promise of adding power to installed units will prevent some Storage Technology customers from scrapping their units in favor of IBM's triple-density models, which are already shipping.

A four-disk Model 8380R, capable of storing 30.2G bytes, lists at $410,000. A similar configuration of the IBM 3380 Model K drive with the same amount of storage lists at $443,000.

In a move that mirrored IBM's announcement last fall of 4.5M byte/sec. transfer rates, Storage Technology announced that its 8890 Sybercache Disk Control Unit will support a 4.5M byte/sec. transfer rate in the fourth quarter.

Storage Technology also unveiled a scratch loader that can queue as many as 10 tape cartridges. The cartridge stacker was designed for Storage Technology's 4480 cartridge subsystem, which is compatible with IBM's 3480 tape cartridge subsystem. The loader is scheduled to be generally available in the third quarter and priced at $8,455.

Model 50

FROM PAGE 1

hands on more, we'll start populating our office with them," said Travers Waltrip, vice-president of communications at The Travelers Corp. in Hartford, Conn., and an early user of the diskless Model 50. "I think our strategy is going to be that the intelligent workstation at Travelers will be the medialess Model 50."

Users praised the diskless Model 50's capabilities in handling the traditional problems that vex larger networks: cost, security and support.

"We're saving $400 to $500 per PC by making them diskless," said a user of one of the IBM prototypes at a large New York-based financial firm. "If you take $500 a pop — the average cost of a floppy, a hard drive and a controller — and multiply that by several thousand workstations, you're talking about millions of dollars saved."

The diskless personal computer is a recent concept that has emerged with the growth of LANs, host connectivity and increasingly sophisticated PC-based file servers. 3Com Corp., Santa Clara Systems, Inc. and NCR Corp. currently offer diskless PCs.

IBM could extend the diskless option during the next several weeks as part of a larger announcement, according to Clare Fleig, director of research at International Technology Group in Los Altos, Calif.

"Later on this year, they will also be bringing out some networking products that will allow the Micro Channel to be hooked up to new models of IBM's controllers," Fleig said. "Their networking strategy will be much cleaner than it is now, and a diskless Model 50 would fit right into these plans."

In addition to the money saved by eliminating software duplication, the setup prevents the removal of sensitive centralized data. "If our brokers don't have disks on their machines, they can't copy their client base the afternoon before they quit the company and go to the competition," the financial user said.

Not first in the family

The Model 50 would not be the first PS/2 family member to go diskless, but it would be the first to be based on the Micro Channel architecture, a proprietary hardware design that IBM says carries big potential for corporate users.

A diskless version of the Intel Corp. 8086-based PS/2 Model 30 has been distributed to some customers, but it does not contain the Micro Channel bus design [CW, June 15, 1987]. IBM has not formally announced either machine.

"We are absolutely going to need the power of the Micro Channel," said The Travelers' Waltrip, who has hooked the diskless Model 50 to a PS/2 Model 60 server supporting a dozen other nodes. "We don't buy anything that has the old bus in it, such as the Model 30."

The Travelers plans to expand its token-ring network to include approximately 500 personal computers, many of which will be diskless PS/2 Model 50s, according to Joe Brophy, senior vice-president at the company.

"It also gives us the capability of instantly standardizing our software," Waltrip added. "All we have to do is down-line load from a server. And every time one of these intelligent workstations comes up, we know it has the latest version of our software running on it."

The Model 50 also affords the opportunity to run IBM and Microsoft Corp.'s OS/2 operating system, which requires an Intel 80286- or 80386-based machine.

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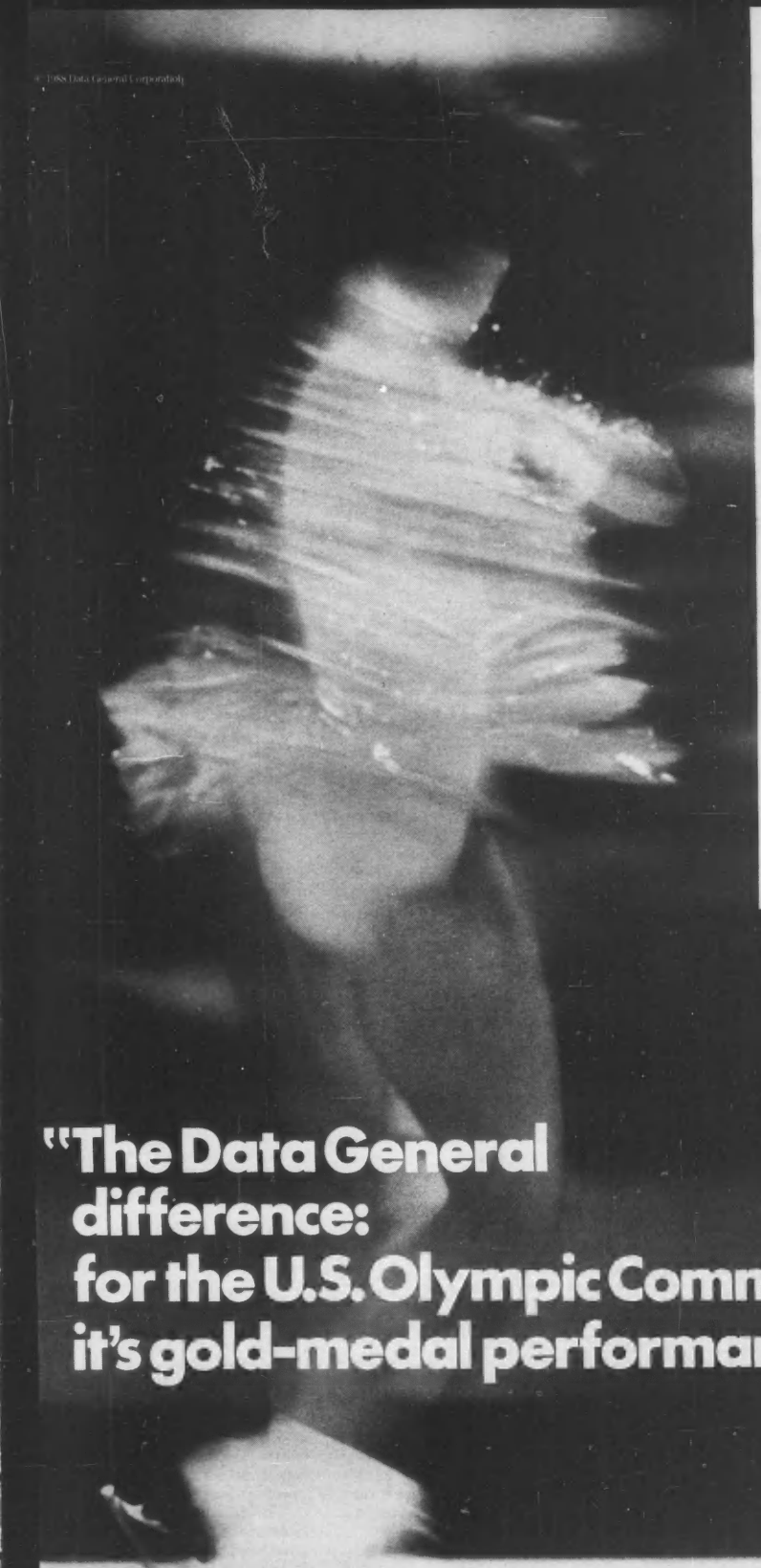

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EDITORIAL

Moneyspeak

THE FOURTH-QUARTER financial reports are in, and information managers are once again sorting through analyses to shape opinions that will affect their confidence in various vendors.

Cost-cutting gave IBM a big earnings boost, but Wall Street was not impressed. Data General's earnings climbed nicely for similar reasons, and Wall Street smiled. Apple, Sun and Microsoft saw profits boom, while Tandem's earnings dipped despite a nice sales gain.

What should MIS make of the quarterly ebb and flow? What do the numbers really say about suppliers and their long-term health?

Often times, very little. To begin with, the requirement that a public company report quarterly financials is a double-edged sword. Its purpose is to provide shareholders with a full and accurate accounting of their investments. But to companies and their customers, quarterly financial results taken at face value can be dangerously misleading, provoking decisions from both parties that are inherently shortsighted.

Three years ago, DEC was struck by a combination of product development delays and product cycle troughs. The result was disastrous quarterly results, a precipitous dive in stock price and then waning customer confidence. Few people, especially within the investment community, took the long view with DEC, and this myopic outlook shook customer confidence.

Clearly, the DEC story is different today. But which is the most accurate over the long haul?

Consider the case of Storage Technology — not the Storage Technology of today, which has emerged from Chapter 11 bankruptcy and has posted several consecutively strong quarters. But consider the Storage Technology of four years ago, the one Jesse Aweida built into the largest peripherals maker in the world, the one that went into Chapter 11.

Close examination, which is easier in hindsight, would have revealed that the old Storage Technology was extremely vulnerable, despite its world-class size. Its rapid growth came as a result of delays in IBM's shipment of key large-scale direct-access storage devices. The overwhelming portion of Storage Technology's sales were from two products — high-end disk drives and tape drives — whose markets were dominated by IBM. Just as companies like Magnuson were destroyed by a single IBM product announcement, Storage Technology fell to the IBM 3380 DASD.

Users have to read beyond the headlines. With the dollar plummeting, how does that impact a vendor doing half its business abroad? And what, therefore, is the impact on its relationship with domestic customers? How are product cycles affecting short-term profits and sales? If profits are largely the result of cost-cutting, how will that affect service and support or long-term investment in key product lines? Perhaps the most critical assessment to make is how responsibly does a vendor react to the normal peaks and valleys of quarterly business results?

LETTERS TO THE EDITOR

Natural evolution

There is a specific reference in "James Martin's show goes on" [CW, Nov. 9, 1987] that I would like to clarify.

The article quoted me as saying that Texas Instruments, Inc.'s computer-aided software engineering (CASE) tool is a closer implementation of my "perfect" model of information engineering than Knowledgeware, Inc.'s IEW CASE tool.

However, TI's product supports *only* that methodology. Although information engineering will gain acceptance as a methodology over time, it is by no means the predominant methodology today. And I believe that to meet today's requirements, a CASE tool must support the methodologies MIS departments are currently using and allow MIS users to evolve at their own pace into more rigorous methodologies such as information engineering.

James Martin

Around for years

I am writing regarding "Folding DOS into Unix" [CW, Dec. 7, 1987]. Finally, it seems that people are making a serious effort to make their DOS applications useful in the era of multitasking.

However, Summa Computer Systems, Inc., the company I work for as a customer support representative, has been doing similar things with a multiuser, multitasking, menu-driven local-area network for years. The product is called SOAS.

SOAS, which stands for Summa Office Automation System, supports IBM's PC-DOS as a task under Summanet, its operating system.

Summanet has proven to be more efficient than Unix. Throughput is better. Up to 10 times as many task switches per second can be performed. Forty tasks can be supported per node. Many real-time applications have been developed using this system.

Since SOAS is completely menu-driven, computer neophytes are able to be productive with the system almost immediately. This makes it not only more functional than both Unix and DOS but much easier to use as well.

Andrew M. Stevens
Syracuse, N.Y.

This week in history

Jan. 30, 1978
Computer equipment from Xerox Corp. and Amdahl Corp., respectively, garner first- and second-place honors in overall user satisfaction in Datapro Research Corp.'s computer users survey.

What makes these results especially noteworthy are that Xerox no longer even makes or supports its systems, and Amdahl is a relative newcomer to the computer business.

Jan. 31, 1983
Houston's inadequate facilities, sultry weather and diesel fumes cause National Computer Conference organizers to ax that city as the site for NCC '84. The decision raises the question of when and where the 1984 conference will be held.

Willing member

I read the article "Restructuring eases maintenance" [CW, Nov. 30, 1987].

The statement attributed to Richard Harrison that no other vendor would agree to a hands-off test is erroneous.

Group Operations, Inc. would have welcomed participation. Unfortunately, we were never notified.

Group Operations' Superstructure has the largest number of users of all the structuring tools combined, with more than 160 sites.

Barry T. Murphy
Vice-President
Proprietary Products Division
Group Operations, Inc.
Washington, D.C.

Unclear logic

I want to provide an opposing view to Efrem Mallach's article "4GLs: Are we talking the same language?" [CW, Dec. 14, 1987].

Mallach painted a myopic and sarcastic picture of the fourth-generation language industry.

He argued that "resource utilization is less of a problem than it once was" and, therefore, fourth-generation language vendors should not improve the efficiency of their products.

While I will not argue with the fact that the cost per million instructions per second is falling, I do believe it is naive to assume

Continued on page 20

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

Can MIS cure health care ills?

Medical facilities finding it hard to swallow high tech's high-priced pill

HARVEY NEWQUIST

Medicine typically operates at the scalpel's edge of technology, from X-rays years ago to computer imaging today. Each successive technology supplants the one preceding it, adding to the cost of patient treatment.

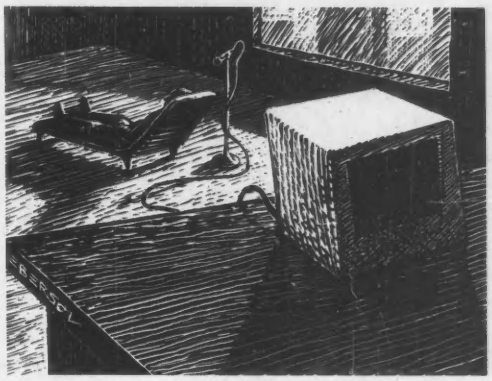
Players in the health care industry — hospitals, health maintenance organizations, clinics — are attempting to use technology to minimize the cost of doing their business, which is delivering medical care. But the technological tools needed to better perform nonadministrative functions — such as doctors' exams, scans, diagnoses and tests — often cost more than they can save in improved efficiency.

There are ethical considerations here as well as financial ones. Not every person can afford a digital subtraction angiogram, which costs three times as much as a standard X-ray. Who should benefit from the most advanced technology — those who need it most or those who can pay for it? And who should decide — the hospital?

MIS's critical condition

MIS and data processing become necessary, even critical, factors in delivering medical services as quickly and inexpensively as possible. Monitoring patients' records, physicians' services, pharmaceutical needs, payments, debits and so on often requires specialized computers and operators.

New hardware and software applications are growing up within medical organizations — applications that will ultimately have to tie in with the existing state of DP.



ROB EBERSOL

For instance, Tufts University School of Medicine, along with three other Massachusetts hospitals, has determined that voice-recognition systems can handle 90% of a radiologist's reporting needs without the aid of a typist.

VA system in practice

The Veterans Administration hospital at the University of Pittsburgh is beta-testing an expert system called the Quick Medical Reference, which has captured the expertise of the university's chief internist. Of the 800 maladies currently associated with internal medicine, the university estimates that its system has already been programmed with expertise in 700.

Although such a knowledge base can never be complete because of ongoing medical research, the Quick Medical Reference is already assisting physicians in making patient diagnoses.

A psychiatric clinic in Green Bay, Wis., is developing a diagnostic aid system that will, in response to a clinician's input, allow the tentative diagnoses of psychiatric disorders. The expert system, which is being developed on a personal computer using software from artificial intelligence system vendor Gold

Continued on page 20

Newquist writes and consults on artificial intelligence and other advanced high-technology topics from his office in Scottsdale, Ariz.

Some marriages of convenience

AMY WOHL

Some new partnerships have made headlines recently.

Jan. 13, Ashton-Tate tied the knot with Microsoft, which, in turn, revealed an existing partnership with Sybase. These deals are aimed at creating a multiuser data base environment. Multiple personal computer users (using Dbase III, Ashton-Tate hopes) could share data via enabling software on a network server. The Ashton-Tate/Microsoft/Sybase collective has named that product SQL Server, a bow in the direction of IBM and its widely accepted standard.

The three vendors have agreed to work together, with Ashton-Tate getting exclusive marketing rights to the retail arena and Microsoft retaining exclusive marketing rights to hardware OEMs.

Just a few days later, Apple and DEC announced their decision to jointly develop (and, it seems, separately market) Apple-to-DEC connectivity products. Presumably, Apple is expecting to gain credibility, access to new markets and needed system-level solutions.

DEC, interestingly enough, has kept saying it is providing this Apple connection because its customers asked for it, implying that the company wouldn't have done anything so radical entirely on its own.

DEC and Apple have always seemed like a natural combination — two companies that believe that excellent products create their own marketing energy; two feature- and product-oriented sets of customers who justify less than standard solutions by making them work themselves if necessary.

Midnight snack

Are these partnerships just the normal course of business, or is something new going on in the computer industry?

A little of both. Great product ideas, particularly in software, still turn up in unpredictable places. Also, the ability to recognize, nurture and bring entirely new products to market is hard to find within large companies.

The software business is a good example. Big companies can write a new and improved version that carries an existing product one step — sometimes a big step — further. Big companies can maintain and support existing products as long as necessary. Only rarely do big companies come up with whole new software concepts. The "Aha!" in the night is more likely to wake light (and hungry) sleepers still looking for their first winner.

So, inevitably, big software companies, such as Microsoft and Ashton-Tate, look to smaller, younger companies, such as Sybase, for innovative — or merely available — software technology.

An age-old story

This attention in itself isn't new. Microsoft and Ashton-Tate, as well as other successful software companies, have grown through acquisitions and partnerships. Think of Multimate, Framework and Powerpoint. Think, for that matter, of MS-DOS. What's different now?

There is no big, powerful, product-hungry company here exploiting the financial needs or business naivete of a small company with a neat product. These are big, powerful companies joining together into very big, very powerful alliances. We are looking, perhaps, at the emergence of "super" software companies. The recent announcements are simple ad hoc alliances, designed to make something happen sooner or to ensure a larger market share for a collectively developed, collectively marketed product.

> THE "AHA!" in the night is more likely to wake light (and hungry) sleepers still looking for their first winner.

The companies are moving in early, locking in their offering as the standard for an important and emerging market, preempting a role that might, in an earlier day, have been played by IBM or an industry consortium.

The next round of joint offerings might feature even larger company mergers, and, indeed, I suspect that such activity could occur this year. But I also expect the emergence of at least a few umbrella relationships, whereby many small developers could bring their wares to market through the talents and resources of a company that would offer funds, packaging, market-

Continued on page 20

Wohl is president of Wohl Associates in Bala Cynwyd, Pa., and editor of "The Wohl Report on End-User Computing" newsletter.

Bringing the kids to interview

AMY SOMMERFELD FIORE

"We understand life's highest priorities," proclaims a national MIS recruiting firm in a recent advertisement. The ad pictures a 35-ish family man beside his smiling wife and daughter. The firm claims it can help him — and you — "achieve both personal and professional satisfaction."

Now isn't this a fresh idea in your search for a new job — admitting up front to a prospective employer that what you really want is a job that will make you *and* your family happy?

Not "I am seeking a new challenge to further my management skills," or "Goals in my five-year career plan include closer analysis of the marketplace and keeping up to date on all technical developments."

Instead, the ad suggests, it might now be valid to say, "The last job I had frustrated me and made my wife crazy," or, "I'm looking for something that doesn't require me to work on Saturday mornings." Or even, "I'd like to relocate to a town with reasonably priced housing and a good school system."

Backward to the future?

If this approach is now valid, it's news to me. Once upon a time, it seemed employers and employees alike understood that the job applicant was looking for personal happiness. We just used the career goals lingo to dress up our desires in more professional garb.

But in recent years, many employers have boldly ignored human needs. When they say they expect dedication to the job, they mean 60-hours-a-week, take-work-home, always-be-on-call dedication. Unfortunately, many ambitious, career-oriented employees buy into this mentality.

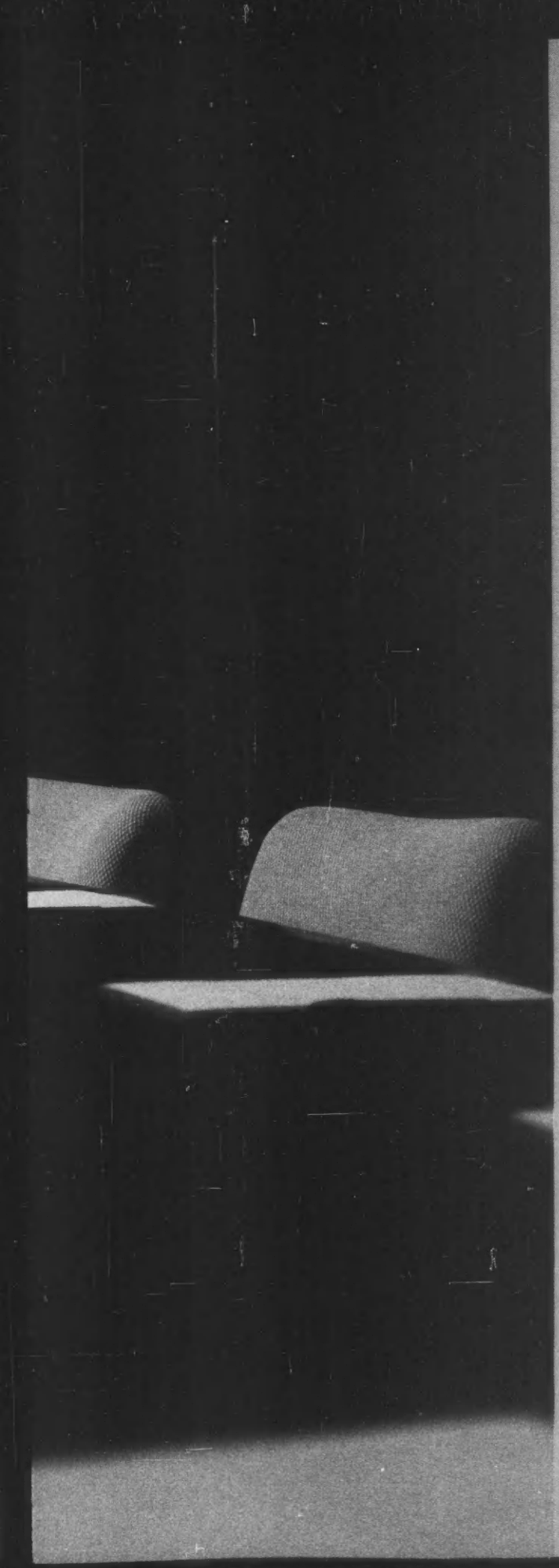
The result? It becomes embarrassing to admit you only want to work 40 hours a week.

"What are you," your friends and co-workers wonder, "some kind of closet housewife?"

Last week, an MIS director showed me his company's memo on employee child care. It assured employees that parent support is a concern of the whole company because "child care-related problems have an impact on absenteeism and productivity."

That's certainly true, but why continue to use bottom-line language when the issue is obviously a personal one?

Fiore is a *Computerworld* senior editor.



"Our Executive Committee doesn't have a clue how fast computers change.

The Executive Committee people we spoke to off-line don't realize that they're placing a long-term bet on the computer network we choose today. They look at computers in their own shop and figure networks are just the wires that connect them. So before Gail gets into AT&T's ISN, I'll get them thinking. Looking across the table at the guy who's got a DEC® or an IBM system and saying 'Hey, we need a network that can work with just about anybody's boxes. And still be here after some of those boxes are history.' Then Gail presents ISN, chapter and verse. Finally, you get up and remind them of what AT&T's done for us. Our committee may not know computer networks, but they sure know

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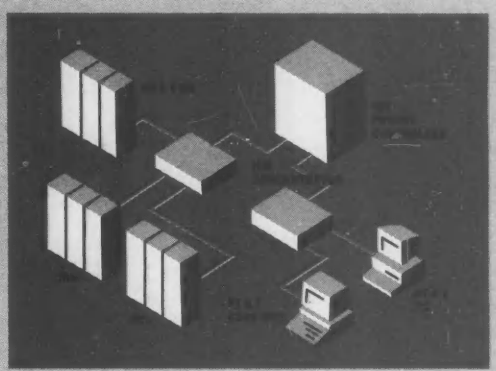

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Health care ills

CONTINUED FROM PAGE 17

Hill Computers, will generate evaluations that meet the criteria established by the Diagnostic and Statistical Manual of Mental Disorders as outlined by the American Psychiatric Association.

Technologies such as magnetic resonance, ultrasound and imaging for reconstruction are already normal, even if esoteric, components of computerized health facilities. Systems that evaluate a person's potential for heart failure, headsets that allow patients to communicate and software programs that enable paralyzed limbs to be activated via electrodes are the next computer frontiers.

Advances such as voice-recognition input and expert systems must ultimately be integrated into mainframes, minicomputers, networks and data bases. A psychiatric evaluation done by an expert system must be able to draw information from a patient's medical history file, which may be located on a different type of computer in a different state.

Conversely, an administrative system for issuing patients doctors' bills at a clinic may need to consider time spent using an expert system at a hospital.

Health care is the first field that serves millions of consumers daily to face this challenge of using computers to try to cut the costs of other types of computers and, at the same time, to better the services delivered to customers.

Marriages

CONTINUED FROM PAGE 17

ing know-how and ready access to distribution channels.

Apple's recent Claris spin-off might serve as a model, although there might also be less structured relationships in which the software inventors might stay in separate companies while funneling their offerings through their packaging and distribution partner.

In fact, it is getting difficult to start new software companies. Anyone with a personal computer and some spare time can think of an idea and write some code, but bringing a commercial product successfully to the marketplace, particularly in volume, is much more difficult. Small companies find it nearly impossible to make their own way. More new software is being brought to market through the acquisition route — and I expect this trend to continue.

For Ashton-Tate and Microsoft, competing more effectively with IBM may be the main goal. IBM's mysterious and still largely undefined Extended Edition of the OS/2 operating system it developed with Microsoft is touted as offering special advantages to customers.

Software companies, as well as clone manufacturers, fear that IBM's OS/2 Extended might cut them out of a substantial part of the lucrative PC market, and they want to act now — before IBM can show its hand — to lock in some customer interest, if not commitments.

DEC and Apple's new alliance may also be an anti-IBM move. Together, with their innovative hardware capabilities and their appeal to customers seeking early exploitation of technology, they are an appealing team. Everyone agrees that a data base is a primary PC application and that users need hardware and software facilities to permit them to readily share data. More important, they need interfaces and pass-through facilities to larger systems — as sketched out in the Apple-DEC announcement — to ease the chore of bringing sophisticated data from larger systems to largely unsophisticated users.

Ashton-Tate, Microsoft, Apple and DEC all will figure in providing pieces of the puzzle. But the prize of market share will go to the vendor who figures out how to make it work easily, with minimum user training or customer programming, and how to support problem identification and resolution in increasingly complex, multivendor systems.

Continued from page 16

that MIS executives, technicians and users do not desire optimum efficiency and responsiveness with any system, including fourth-generation languages.

If efficiency is not an issue, then perhaps productivity is. Not so, according to Mallach. He claimed that if a fourth-generation language reduces programming time by 50%, then the average programmer will save only three months' work — a gain easily used up in the fourth-generation language learning curve and, thereby, resulting in a net productivity loss.

That is preposterous. Mallach's logic assumes that programmers only code for six months per year, that programmers will only use fourth-generation language technology for one year vs. being an ongoing skill and that fourth-generation languages only address the development portion of the system development life cycle and not prototyping, maintenance or standardization.

I am glad Henry Ford did not use the same logic as Mallach when designing the Model T. The horse-drawn carriage was efficient, productive and superior technically to other forms of transportation at that time.

However, Ford had a vision. Without a clear vision for the future, based on innovation and technical excellence, how can any fourth-generation language vendor expect to have future success in the commercial data processing marketplace?

Fred Mangiameli
Branch Sales Manager
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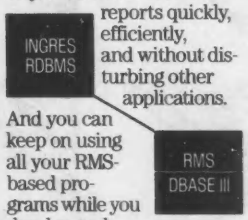

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SOFT TALK

Charles Babcock

Have a Coke and a contract

The Coca-Cola Co.'s Corporate Information Systems (CIS) has become a leaner operation through the use of outside contract help. While many shops use contract personnel on a spot basis, Coca-Cola uses contractors 12 months a year to round out a highly compact CIS development staff.

At any given time, 15 CIS staffers are working alongside 65 hourly-wage contract workers on Coca-Cola projects. Although the Coca-Cola staffers come out of the ranks of programmers and analysts, they function much more as project leaders.

"I give my people a lot of credit. They didn't all believe in it. Some of them didn't want to do it. But they all rose to the occasion," says William H. Hendry, manager of corporate systems, who supervised the transition (see story page 57).

How did Coca-Cola reach this advanced stage of reliance on contract workers, and how does it work?

When Hendry joined the company in 1983, Coca-Cola had a new chairman who wanted to slim down the company, stop adding employees to its payroll and begin to make things happen with its existing staff.

Hendry remembers saying during his job interview: "If I'm not making very many mistakes, then I'm probably not

Continued on page 24

CASE firms ask what's new

AI, shakeout seen impacting technology's growth in near future

BY NELL MARGOLIS
CW STAFF

NEWTON, Mass. — CASE is hot or CASE is not, depending on who you talk to. Last week, it was two software developers. Both said they are in the CASE market, but they offered starkly contrasting views of where the market is.

"Five years ago, the market didn't exist," Richard A. Carpenter, president of Cambridge, Mass.-based Index Technology Corp., told 150 members of the Massachusetts Software Council. "Now, the CASE market is growing in excess of 35% per year and is estimated to reach $1 billion by the early 1990s."

Carpenter, whose company's

Richard A. Carpenter

Excelerator product is one of the most widely used in the so-called upper CASE, or front-end design and analysis, market, predicted the emergence of a new computer-aided software engineering segment. "I call it the templates area," he said. "There's a growing market for prepackaged central data dictionaries that can then be added to by the user to customize them.

"Artificial intelligence techniques, which are just beginning to be used in CASE, will have a significant impact — particularly in providing 'on-board coaching' to software developers," he said.

Carpenter's previews of coming attractions also included emerging standards; a blurring of the line between upper and lower CASE — the areas of back-end code generation, testing and maintenance; increasing integration of CASE with new

Continued on page 27

TEXT MANAGEMENT SYSTEMS

Help for the paper chase

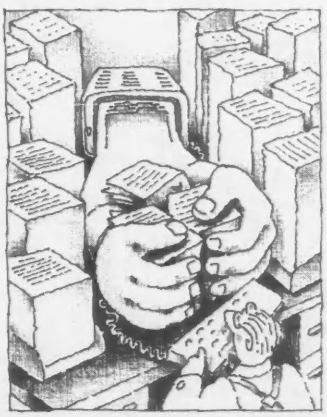
BY JEAN S. BOZMAN
CW STAFF

Like an adolescent, text management is about to come of age.

Born in the 1970s to run on mainframes, these highly specialized software packages were used mostly by large organizations that needed to store and archive extremely large amounts of text. Such users did not mind the high prices — often in excess of $75,000 — or the intensive use of disk-drive resources that these systems required. The ability to accurately locate and revise vital documents, including legislation, insurance policies and technical reports, was worth the trouble.

But the high prices and the tendency of text management systems to use up costly system memory kept the size of the market

Continued on page 25



PETER PERRY

Checking up on SQL/DS

BY CHARLES BABCOCK
CW STAFF

IBM's SQL/DS, just like its big brother, DB2, lacks referential integrity in the operation of its relational data base manager. But a small Wellesley, Mass., company is attempting to at least warn users when their data has lost integrity.

Intex Solutions, Inc. is offering SQL:Verify to provide an audit trail of changes to the data base and an analysis of tables used to see whether changes to data in one location have resulted in appropriate changes to related data in other locations.

SQL:Verify started out as an audit tool to be called SQL:Documentor, but beta-test users of the utility said what they really wanted was a way to check the referential integrity of their data, according to Mark Gelfand, chief of research and development at Intex.

An early user of the product, Michael G. Caplan, vice-president of investment technology at

Continued on page 24

Inside

- Information Management software utility aids Wang users in developing custom applications. Page 24.
- Gibson-Graves announces management and QA software for manufacturing environments. Page 28.
- Palladian Software ports its expert system application package to Apollo's Domain Series 4000 Super Workstation. Page 28.

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SQL/DS

CONTINUED FROM PAGE 23

Independence Investment Associates, Inc., a subsidiary of John Hancock Mutual Life Insurance Co. in Boston, said the product "identifies the holes. It gives you a list of 'here's where you don't have a matchup in your tables.' "

Caplan said the burden of supplying referential integrity lies with the user, who must debug the application program so that it does not cause data in one table to be updated while ignoring related data in another table.

Caplan said SQL/DS users could provide the referential integrity check without SQL:Verify, but they would probably do so by creating a brute-force query that would run through existing tables looking for discrepancies in related data.

Caplan said he has used SQL:Verify to check the integrity of entries in a cross-reference dictionary containing 3,000 code numbers of securities. The check took about 30 seconds. "From where I sit, it is blindingly quick," he said.

He estimated it would take SQL/DS running on an IBM 4381 Model 11 about 10 minutes to do the same check through a query that he would write himself.

The referential integrity check is limited to entities and does not cover domains, Gelfand said. SQL:Verify is priced at $2,000 plus a $200 monthly fee at an IBM Group 10 graduated pricing site. It is priced at $5,000 pus a $500 monthly fee for an IBM Group 40 site.

SOFTWARE NOTES

Consortium forms to develop mainframe ART

Inference Corp. in Los Angeles has formed a consortium with three companies, including Ford Motor Co. and Lockheed Corp., to fund and co-develop tools that will allow its Automated Reasoning Tool (ART) to be used to develop expert systems on IBM mainframes. The ART tools will be designed for IBM's IMS/DC, TSO and CICS environments.

Software that will help optimize the execution of programs on parallel processors has been developed at **Indiana University** and is now considered in the public domain. The **Blaze Editor**, or **Bled**, aids users in improving performance of software already ported to the parallel processing environment. Bled allows interactive program editing and will warn a user if changes are being made in violation of the original syntax, according to Dennis Gannon, associate professor of computer science at Indiana University. An addition is under development to allow estimates of program execution behavior, he said.

The New York brokerage house of Donaldson, Lufkin & Jenrette has removed **Oracle Corp.** from the recommended list in its Jan. 11 research bulletin, partly because the firm believes Oracle must have exhausted its short-term upward potential. After giving Oracle's technology, strategy and sales force a favorable review, it concluded that a slowdown in **Tandem Computers, Inc.** business left the brokerage house "uneasy." The firm "does not expect the stock to outperform in the current investment climate."

Computer Corporation of America says it has an interface between Ada and its Model 204 data base management system. The interface allows an Ada application to access the Model 204.

Tool kit to help Wang users customize applications

BY NELL MARGOLIS
CW STAFF

FALLS CHURCH, Va. — Information Management Consultants, Inc. (IMC) last week unveiled a software utility aimed at aiding users of Wang Integrated Image Systems (WIIS) in developing customized applications.

IMC's Transaction Assistant, a programming tool that lets users develop applications for automated document tracking, was specifically designed to supply the missing link for WIIS.

Introduced by Wang Laboratories, Inc. in July 1987, WIIS is an image processing system that scans images of documents and pictures and stores them on optical disks, magnetic disks or microfilm, from which they can be retrieved. WIIS is based on the Wang VS minicomputer and the Wang Professional Application Creation Environment (PACE).

Richard D. Schwarz, who follows image processing for Shearson Lehman Brothers, said that "applications software is crucially important in this industry." The image processing market is expected to triple to $308 million this year, but so far, "the hardware is outpacing the software — you could almost call software the missing link," Schwarz said. "A tool kit could be tremendously important."

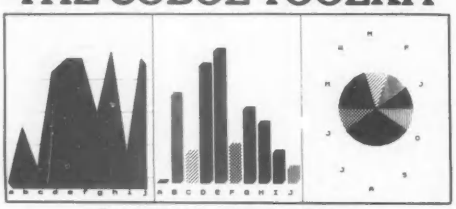
Wang is banking on WIIS to push VS sales and to power a company turnaround. However, Charles A. Magliato, northeast regional manger of IMC, a Wang cooperative marketing partner, said prospective customers "had trouble envisioning WIIS in their own settings, particularly in online transaction processing applications."

What Transaction Assistant does, said IMC President Sudhakar Shenoy, "is let the user define, by means of tables, every step a document takes, from the moment it enters a company until its final resolution." Both IMC and Wang are targeting large, transaction-intensive, paper-swamped outfits.

With the help of embedded triggers and a key-word system that can be programmed directly into an application, Shenoy said, electronic images captured by WIIS and grouped into "electronic file folders" with assigned data processing transaction codes can be automatically routed to the appropriate stations to be processed by the defined parties.

Available now, the Transaction Assistant costs about $10,000, depending on the extent of support bundled in.

THE COBOL TOOLKIT



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Babcock

CONTINUED FROM PAGE 23

making enough decisions. You have to try some things," he says. That willingness to make decisions, along with Hendry's previous experience at getting the most out of a small staff, was what Coca-Cola was looking for.

"I was told I couldn't get any additional people. I said, 'Fine. I'll have my people do the things most important to me,' " Hendry recalls.

While serving as MIS director at Federal-Mogul, a national auto parts supplier in Detroit, Hendry had leveraged a small staff by making liberal use of outside contractors.

Bringing in outside contractors has its implicit hazards, however. They are paid a higher wage than regular employees, partly because they are not subject to company benefits. They are frequently newcomers, and the rest of the organization is more suspicious of them than fellow employees. And if contractors represent poor talent, they must be detected and winnowed out quickly.

Hendry made it clear to the custom programming firms in Atlanta that he expected their best people. He screened firms himself to make sure he was acquainted with the talent pool available. And although reasons of space have something to do with it, a contract employee's working conditions never seem quite equal to those of a regular employee. Two or three contract programmers, for example, can fit into one cubicle, while only one Coca-Cola employee would occupy that space.

Given these hazards, Hendry nonetheless believes that contract workers represent an effective way to leverage a small staff. Different projects require different talents, and the metropolitan Atlanta region affords a wide selection. Coca-Cola is a user of Applied Data Research's Datacom/DB and, when needed, trained Datacom/DB programmers are available.

At the same time, it is easier to change programming talent through outside contractors than it is to change employees.

These advantages are somewhat offset by the fact that once a project is completed, the maintenance task is left to Coca-Cola. The contract programmers remain on call, if needed, to work on part of a system, but the primary burden of support falls on the regular in-house staff of 15.

Having played his outside contractors to the hilt, Hendry nows says he has a gut feeling that he is overleveraged and it is time to advocate adding more employees to provide greater in-house depth. He is in a well-informed position to make that case.

Babcock is *Computerworld's* senior editor, software & services.

Paper chase

CONTINUED FROM PAGE 23

small. "Up to now, it has been [only] a stable market," says Jim Russo, vice-president of marketing at Focus Research, Inc. Even today, there are only several thousand users of such systems in the U.S., industry analysts say.

Market getting hot

But implementation of the technology is on the rise, analysts also point out. "The market's beginning to heat up," says Heidi Gabrielson, an analyst with International Data Corp. in Framingham, Mass. And among today's users are some of the largest organizations in the country: B. F. Goodrich Co., Du Pont Co., the National Aeronautics and Space Administration, Cummins Engine Co. and Texaco, Inc.

Text management systems often act as repositories for legislation, insurance guidelines, technical reports and legal documents, including those needed for litigation purposes.

A fairly new user in the insurance industry is Northwestern National Life Insurance Co. David W. Haskin, senior vice-president of corporate resources, says Northwestern National has been using Infodata Systems, Inc.'s Inquire/Text for 18 months.

"We started using Inquire in our legal department, where we manage and create hundreds of legal documents," Haskin says. "But there will be other applications, since underwriting requires the use of huge volumes of text and manuals." Right now, 40 to 50 people are using Inquire on a daily basis. But Haskin says he expects that number to double or triple in the next two years.

One of Northwestern National's biggest advantages in using a text management system is the reduction of paper. "We have been able to cut down tremendously on our paper usage — it's less by a factor of 5-to-1," Haskin says.

In addition, text management makes information more accessible. "Using a product like Inquire allows your agents to have up-to-date information, since the system is on-line and interactive," Haskin points out. "Before we had Inquire, our manuals were only updated as needed and were reprinted at intervals of two or three years."

In addition to insurance companies, newspapers and other publications use text management systems to archive out-of-date stories or as reference libraries. And large firms use the products to store and access corporate policies and procedures.

At the Illinois Bell headquarters in Chicago, Information Dimensions, Inc.'s Basis text management product has been used for three years to capture and recall key corporate documents, such as speeches given by company executives and media clippings pertaining to the company. Now, Illinois Bell is developing a prototype interface between Basis and Digital Equipment Corp.'s All-In-1 integrated office package that Information Dimensions says it plans to sell next year.

"It's just a natural extension of office automation," says Tom Zak, senior systems analyst at Illinois Bell and data base administrator for many of the Basis text libraries. The Bell operating company maintains nine separate data bases built on the Basis product, each handling a separate document category. Now, users are trying to capture electronic messages and memos — and to send them, along with attached text, to co-workers.

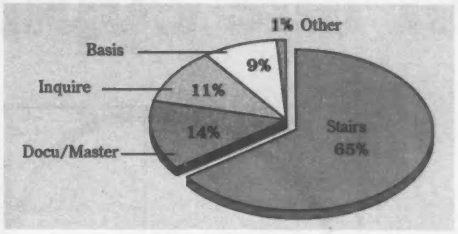
Text management systems vary in their underlying structure, but in general, there are more types of data stored in text management systems than in other office automation products. One of the additional types of data refers to the placement of specific words in the text as well as the frequency of their use.

In addition, data fields are longer in these products. "The text management system doesn't care how long a field is," says Ann Marie Horcher, data base support specialist at Dow Corning Corp. in Midland, Mich. "That's important for maintaining a data base about chemicals and chemical names. Chemical information tends to have names that are longer

Continued on page 27

Installed shares of text management systems

Of 12,000 IBM mainframe sites interviewed, 408, or 3.4%, use the technology



INFORMATION PROVIDED BY FOCUS RESEARCH SYSTEMS, INC.
CW CHART

Users push for text management players

The text management system market has been slow to develop. In fact, "many organizations struggled to find a niche for text data base management systems and couldn't find one," says Jim Russo, vice-president of marketing at Focus Research Systems, Inc. "If text management is to emerge again as a technology, it may be as a delivery vehicle."

Recently, however, users have pushed vendors in their need for text management systems. "Either text [management systems] are coming of age, or the companies are coming of age in how they deal with data processing," says Ann Marie Horcher, data base support specialist at Dow Corning Corp. in Midland, Mich.

Whatever the case, vendors seem to be making strides toward promoting the technology. According to Heidi Gabrielson, an analyst with International Data Corp. in Framingham, Mass., "Even the traditional DBMS companies are thinking about getting into the market, including Oracle Corp. and Relational Technology. Some have researched the possibility of offering a text data base management product and are looking at the text management vendors for products to resell." In addition, Software AG of North America, Inc. recently announced a text retrieval system called TRS.

Still, there are surprisingly few major, active players in the text management software market. There are at least 15 suppliers of text management systems, but just a handful sell most of the installed systems. IBM got into the business in the 1970s with Stairs, a product made by IBM in Germany, which accounted for 65% of the 408 text data base sites cited by a 1987 Focus Research survey (see chart above).

Another 14% in the Focus Research survey said they used Docu/Master, an older product developed by Dun & Bradstreet Corp. subsidiary TSI International. Docu/Master is now sold by Document Systems, Inc. in Norwalk, Conn.

Of the remaining text management users in the Focus survey, 11.2% said they use the Inquire/Text system from Infodata Systems, Inc. in Falls Church, Va., and 8.6% use Basis, a system from Information Dimensions, Inc., a Columbus, Ohio, subsidiary of the Battelle Memorial Institute. The final 1.1% surveyed said they used a variety of systems, notably TextDBMS from Data Retrieval Corporation of America in Milwaukee, a subsidiary of West Publishing Co.

Not included in the Focus Research study were users of packages that run on non-IBM systems, including computers from Digital Equipment Corp., Wang Laboratories, Inc. and Control Data Corp.

Information Dimensions, which claims 1,000 licenses for its Basis product, has versions of Basis that run on all three of the above firms' equipment. Other vendors also serve the DEC marketplace, including DEC itself, which offers the Datatrieve product under its VMS operating system offerings.

Another market study, conducted recently by Computer Intelligence in La Jolla, Calif., found a 46% market share for IBM's Stairs, a 42% share for Inquire, a 7% share for Docu/Master and a 5% share for Basis. To compile its findings, Computer Intelligence surveyed 11,400 IBM mainframe sites and found fewer than 400 text management system users altogether.

Other products, such as BRS/Search from BRS Information Technologies in Latham, N.Y., Text/204 from Computer Corporation of America in Cambridge, Mass., and Info-DB Plus from Henco Software, Inc., did not show up on the surveys because of a relatively low installed base.

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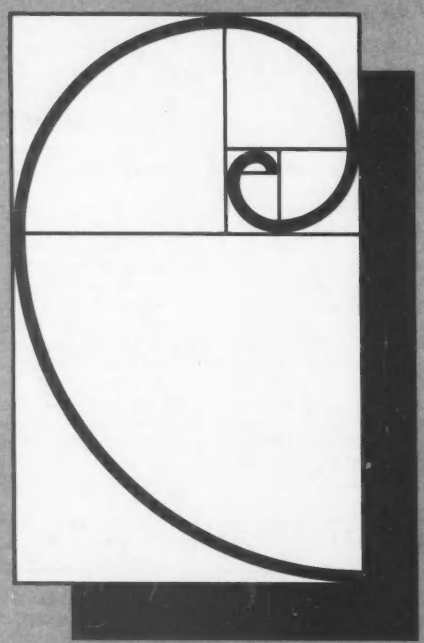

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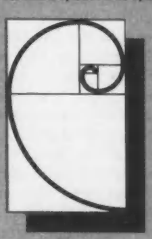

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Paper chase

CONTINUED FROM PAGE 23

than standard English names, and 256 characters is usually the choke point of any standard information systems product." Dow Corning uses Basis.

Some text management products are more suited to locating key words and build a very small index, as there are very few text fields. For instance, Docu/Master — an older product developed by Dun & Bradstreet Corp. subsidiary TSI International and now sold by Document Systems, Inc. in Norwalk, Conn. — searches for words sequentially, stopping at each hit in the text.

Other products, such as Infodata Systems' Inquire/Text and TextDBMS from Data Retrieval Corporation of America in Milwaukee, build relatively large indexes as text in their files.

Such systems are based on positional indexing, which means that each new word is cataloged according to its relative position in the document.

As more text is entered, the size of the index grows. Only "noise" words, such as common prepositions and short verbs like "is," would not be cataloged. For this reason, indexes to a text management system can build files that are 10% to 30% as large as the documents being stored. That means that an index to a document 10M bytes long might add an additional storage burden of 3M bytes.

Accordingly, Illinois Bell's Zak predicts that such systems will come to occupy a significant part of the real estate on a company's disk drive peripherals. "The largest text data base we have is 100,000 blocks, which is about 10% of one 896M-byte RA 81 disk drive," he says.

But if storage on disk drives ever becomes a problem, other users say, some documents may be archived to compact disk/read-only memory drives or optical disks. This may be done in-house or farmed out to dial-up services.

"We definitely will do some archiving, either to an optical media or to a solid-state disk," Northwestern National's Haskin says.

For many users, the storage question simply does not come up. The Illinois State Legislature uses more than one IBM 3380 disk drive to hold the state's laws on-line for electronic research, and the California State Legislature is planning to place all the state codes on-line. The California legislature uses Inquire/Text for text retrieval of legislation and recently purchased TextDBMS for creating new text files.

While the storage issue can be resolved, updating is another matter. Most text management systems are not updated on-line. Instead, a data base administrator decides how often to run batch updates. The California legislature runs such updates once every half-hour during the workday. Other users prefer to update overnight. Between updates, alterations to stored text are maintained in interim files.

IBM behind the pack?

Just as the pace of installation of most text management systems is beginning to pick up (see story page 25), many users of the older front-runner product, IBM's Stairs, are abandoning it. IBM added Stairs/PC, a PC interface to Stairs running on the mainframe, in June 1987. But many users resent IBM's lack of support for the Stairs product and fear it is only a matter of time before Stairs is discontinued.

Dow Corning did not wait. The firm used Stairs until Basis was brought on-line four years ago. "We found that Stairs did not allow us sufficient functionality and flexibility to deal with the complex types of text we had," says Horcher, who is also president of the Basis Users Group. "It was a more basic type of system. You had to work by its rules. Sometimes an older design just can't make the journey as a company's needs grow."

Stairs was abandoned by Cummins Engine, too. Three years ago, Columbus, Ind.-based Cummins' corporate library switched to Docu/Master after 10 years with Stairs. "We use it constantly," says Bill Poor, manager of library services. "Docu/Master is a very easy system for the novice user, and the real beauty of it is that you can use it from any IBM terminal or IBM PC in the company."

Ease of use is not the only reason users purchase these products. Jack Plant, a consultant in end-user computing at the Automobile Club of Michigan in Dearborn, evaluated the leading IBM-compatible products and says, "All these products do pretty much the same thing, and they do it in pretty much the same way."

The auto club settled on TextDBMS in June because that product's Textbuilder module allowed the club to easily customize the user menus. The organization, which runs an IBM 3090 Model 400, is developing multiple text data bases that will store travel information and facts on Michigan attractions that will help travel consultants handle phone inquiries.

> "WE HAVE been able to cut down tremendously on our paper usage — it's less by a factor of 5-to-1."
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Future applications

As links to electronic mail systems grow, the nature of text management applications will vary. Some emerging uses might include research libraries for corporate memo writers, text data bases for manufacturing procedures and historical files that guide corporate management in making policy decisions.

New uses for text management are surfacing. Several large users are cooperating with the text management systems vendors to produce interfaces with integrated office automation packages such as IBM's Professional Office System and DEC's All-In-1. The trend is unmistakable, as users like Illinois Bell precede vendors in forging transparent links between an end user's word processing package or integrated office package — and the underlying text retrieval engine.

According to Dow Corning's Horcher, "Many people are finding that with electronic mail, they finally have the text in a form that's easily transferable among computers. And since keying in text is harder than keying in data, [text management systems] are being linked to electronic mail as a whole new way of getting at information."

When users are shopping for text management systems, it can be difficult to select the product that best fits their needs. Sometimes, MIS managers are joined by a corporation's librarians or lawyers in making the decision.

Complicating the selection process is the fact that some vendors, such as Infodata Systems, Data Retrieval and Information Dimensions, do not have standard screen menus. Instead, they provide users with a tool kit of statements that allow users to customize the screen interface.

One added attraction, though, is that most vendors offer prospective converts the ability to use the software on a trial basis for 60 to 90 days.

In the end, the satisfaction of the end users will determine the success of a text system. "We were looking for a system that was really easy to use," says Larry Plunkett, senior system programmer at Florida Power & Light Co., which recently installed TextDBMS. "Most of my end users, including many corporate lawyers, could be described as being anti-DP," Plunkett points out. And every little bit — including an easy-to-use text management system — helps.

CASE

CONTINUED FROM PAGE 23

techniques and methodologies; and the inevitable result of a boom: a shakeout, "probably starting next year and continuing on into 1990."

In contrast to the view from upper CASE, Gordon J. VanderBrug, vice-president of development at Salem, Mass.-based Language Technology, Inc. questioned the use of the words new and successful as apt descriptions of CASE.

"What's new is the acronym," said VanderBrug, who described himself as representing neither back-end nor lower CASE, but "existing CASE." Language Technology produces a Cobol analysis and restructuring product called Recoder.

Recent figures show that at the start of 1987, there were some 750,000 software programmers and analysts in the U.S., VanderBrug said. If that is so, he said, "the question becomes, Why hasn't CASE been more successful? Because what most CASE tools automate is not what most software programmers do."

Citing maintenance as accounting for some 80% of the overall effort of providing software, the Language Technology executive called it "grossly overlooked" by automation enthusiasts. "What we desperately need is not more code generators, but a reverse-engineering technology to aid in maintenance."

VanderBrug heralded a coming "redesign era," replete with tools that make reverse-engineering abstractions interactively available to programmers, wed automatic restructuring to graphics workstations and support automatic derivation of data abstractions from Cobol. "We must have CASE for existing systems," he said. "They control almost every aspect of our business lives."

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A software system designed for use in management and quality assurance applications in manufacturing environments has been announced by **The Gibson-Graves Co.**

According to the vendor, **Traq-1** features specific modules for analyzing quality data for raw materials, manufacturing and both batch and lot-oriented finished materials.

The system also provides full data base query and reporting capabilities, the vendor said.

Traq-1 runs on Digital Equipment Corp. VAX systems. A basic Traq-1 license costs $25,000.

Gibson-Graves, P.O. Box 1078, 261 South St., Wrentham, Mass. 02093. 617-384-7164.

Applications packages

Palladian Software, Inc. has ported its **Palladian Operations Advisor** expert system application package to Apollo Computer, Inc.'s Domain Series 4000 Personal Super Workstation.

The Operations Advisor was designed for use in applications involving capacity planning, product mix change, new technology implementation, new methodologies and their effects on lead time, work-in-process inventories and cost reductions.

An initial license for the Operations Advisor costs $90,000.

Palladian, Four Cambridge Center, Cambridge, Mass. 02142. 617-661-7171.

Languages

An enhanced version of the **GT.M** MUMPS compiler for the Digital Equipment Corp. VAX family of computers has been announced by **Greystone Technology Corp.**

GT.M Version 2.0 features incremental backup, a faster version of the data base integrity checker, data base journaling, an on-line Help facility, new language features and a two-volume set of documentation.

GT.M conforms to ANSI-standard X11.1. It is a true optimizing compiler that generates native-mode VAX machine code. An incremental linker and a concurrent data base system are included in Version 2.

GT.M Version 2.0 costs from $1,950 to $35,000.

Greystone Technology, 8 Lakeside Office Park, Wakefield, Mass. 01880. 617-246-0461.

Utilities

A general-purpose systems management facility (SMF) data-movement backup utility has been announced by **Advanced Software Products Group, Inc.**

Developed by Woven Software, Inc. in Houston, **SMFutil** operates as a replacement for the IBM IFASMFPD system utility.

Functions include the ability to act as an interface between Computer Associates International, Inc.'s CA-Jars accounting package; Marino Associates, Inc.'s MICS billing system; and the SAS system from SAS Institute, Inc.

Data retrieval is based on user-supplied data selection criteria, and error correction and recovery features are included.

SMFutil runs on IBM MVS-based CPUs. It costs $7,500.

Advanced Software Products, Suite 401, 2335 Tamiami Trail N., Naples, Fla. 33940. 813-649-1548.

Data base management systems

3CI, Inc. has released **Infocen Version 7.2**, an enhanced version of its relational data base management system and fourth-generation language application development system.

Version 7.2 includes enhancements that allow the handling of document files, incorporate Wordperfect Corp.'s Wordperfect applications and provide new commands for the Macro module and record subsets.

Infocen is compatible with Digital Equipment Corp., Data General Corp. and Honeywell Bull, Inc. computer systems. It is priced from $30,000 to $50,000 per system.

3CI, Solar Office Plaza, 155 W. Harvard, Fort Collins, Colo.80525. 303-223-2722.

Development tools

A product that supports IBM VSAM file management operating in native mode under the VM operating system for IBM 370 and compatible computers has been announced by **Unicorn Systems Co.**

Called **VMVSAM**, the software provides multiuser VSAM file support for both development and execution of programs. It provides full VSAM compatibility for Cobol programs ported from the IBM VSE or VMS environment. A call-level interface is provided for assembler and Rexx programs.

A permanent license fee ranges from $5,500 to $14,000.

Unicorn Systems, 3807 Wilshire Blvd., Los Angeles, Calif. 90010. 213-380-6974.

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On your (bench)mark, get set, go. Compaq recently completed a couple of different benchmarks comparing how IBM's OS/2 Standard Edition 1.0 runs on IBM and Compaq systems. The first set of benchmarks pitted IBM's version of OS/2 against Compaq's version, set to be released by the end of March, running on Compaq's machines. "From what we can see from CPU, video and coprocessor benchmarks, both operating systems [running] on our products are basically equal," said Gary Stimac, Compaq's vice-president of systems engineering.

In comparing IBM's OS/2 on IBM systems with Compaq's OS/2 on that firm's systems, Stimac said the only difference in performance is the difference in the megahertz speed of the chip. "If our [megahertz] processor is 20% faster than theirs, then the benchmark comes out exactly 20% faster."

Stimac said he is "very comfortable" in the feeling that Compaq hasn't lost any performance advantages in running OS/2 and that IBM hasn't

Continued on page 34

SCO Xenix, OS/2 score equally

Face-off uses Xenix 286 after previous 386 matchup called unfair

BY ALAN J. RYAN
CW STAFF

CHICAGO — Soon after IBM and Microsoft Corp. questioned the usefulness of benchmark tests comparing their jointly developed OS/2 with SCO Xenix optimized for the Intel Corp. 80386 chip, a benchmark software firm here conducted new tests comparing OS/2 with a comparable version of Xenix.

The results of the latest test conducted by Neal Nelson & Associates, which compares OS/2 with SCO Xenix 286 Release 2.2 in 17 different tests, found SCO Xenix faster in five tests and OS/2 faster in four.

According to spokesmen for IBM and Microsoft [CW, Jan. 11], the original tests unfairly pitted OS/2, an operating system designed to work with Intel's 80286 microprocessor, against a version of Xenix designed to work with the 80386.

Those tests showed the initial release of IBM's OS/2 may run up to seven times slower than The Santa Cruz Operation, Inc.'s Xenix System V when performing the same tasks on the same computer. The computer used in the test was a 2M-byte, 16-MHz IBM Personal System/2 Model 80 with a 70M-byte enhanced small disk interface disk drive.

Originator says tests fair

Neal Nelson, principal of the testing firm, maintained that his original tests, conducted soon after the public release of OS/2 [CW, Dec. 28, 1987/Jan. 4, 1988], were fair.

"The logic of the test was that if a person were to buy OS/2 or Xenix for the PS/2 Model 80 at that time, [OS/2 and Xenix 386] were the choices available, and a performance comparison might be of interest," Nelson said.

The benchmark tests indicate how the operating systems fare in the multitasking environment; they show a computer running first one copy of a task, then increasing one by one until 20 copies are executing simultaneously. The tests also indicate the degradation in seconds as the number of copies increases.

In the latest benchmark tests, OS/2 proved 300% to 600% slower than SCO Xenix 286, introduced in 1985, in a test that included 16- and 62-bit integer math, function calls, loops and sequential and random disk I/O.

According to Nelson, the test might be similar to a normal application mix with office automation and data base activity occurring at the same time. As multitasking activity was increased, OS/2 showed increased degradation.

In a test that compared OS/2 with SCO Xenix 286 in the performance of 100,000 calculations with 64-bit, double-precision floating-point numbers — similar to an engineering or scientific application — OS/2 was faster than Xenix, with differences that ranged from 40% to 50%, the test showed.

In some tests, the operating systems were neck-and-neck in performance. Those included calculation-intensive tasks like word processing, a 250,000-cycle loop with no calculations inside the loop and short- and long-integer math.

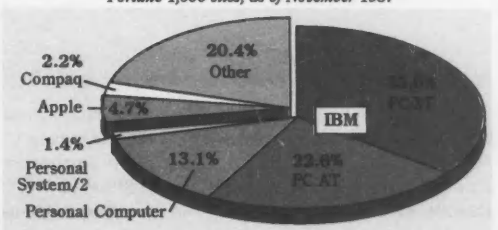
Inside

- AST's Qureshey speaks out. Page 31.
- Quadram board seen by some as poor man's 386. Page 31.
- Wisard claims its Forecaster can spot trends. Page 36.

Data View

IBM's PC of the rock

IBM clearly leads in personal computer market share at Fortune 1,000 sites, as of November 1987



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Floppies stiffened up

Maxell says diskettes' durability doubled

BY ALAN ALPER
CW STAFF

NEW YORK — Maxell Corporation of America recently unveiled a family of floppy diskettes said to offer significantly greater durability and error resistance than its existing product line.

The RD series, which includes 8-, 5¼-, 3½- and 2.8-in. diskettes, employs a new technology said to more securely bond magnetic particles to the floppy diskettes' base film. As a result, single-track durability on 5¼- and 3½-in. diskettes is doubled to 40 million and 25 million passes, respectively, the company said.

The magnetic particles themselves have been improved, resulting in an increase of 10% in signal amplitude, noted Takashi Ozawa, Maxell's vice-president

Continued on page 34

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AST's Qureshey assays the thrill-a-minute PS/2 future

AST Research, Inc. has blossomed from one of the first and biggest IBM Personal Computer enhancement board vendors into a diversified systems manufacturer. After releasing the widely praised Premium/286 microcomputer in the fall of 1986, AST followed up with desktop laser printers and enhanced board offerings for Apple Computer, Inc.'s Macintosh and Digital Equipment Corp.'s VAX markets.

On Black Monday — Oct. 19, 1987 — AST introduced its latest system, the Premium/386, giving users some of the benefits of IBM's Personal System/2 Micro Channel architecture but within the IBM PC AT environment. The company also unveiled the first of a series of intelligent peripheral controller boards, which will take advantage of the Premium/386's Smartslot cooperative processing feature.

AST's diversification has not been without cost, however. Although revenue levels have been encouraging, the firm's net income dropped consistently through fiscal 1987. Only now is it edging back into the black.

Safi Qureshey, president and cofounder of AST, spoke recently with *Computerworld* West Coast correspondent James A. Martin about the company's diversification, future directions and the microcomputer industry outlook for 1988. Qureshey formerly worked at Computer Automation, Inc., an Irvine, Calif., minicomputer manufacturer.

What has been the reaction so far to the Premium/386? How many units have been shipped or sold to date?

We just started shipping in December, so we don't have any numbers yet. If you look at what's been written so far, you'll see it's been received very well. Just as we did with our 286 machine, we didn't just come out with a standard 386 that looks like a fast PC AT. We added some unique capabilities to do more than that. That's been our hallmark in differentiating ourselves — offering unique features within the standard.

Qureshey leads AST *diversification, marked by emphasis on the unique*

With PS/2 clones expected this year, what will happen to machines like the Premium/386, which only partially mimics the Micro Channel?

We're totally booked with orders and trying to manufacture systems as fast as we can. Introducing a PS/2 product would confuse our dealers and customers. On top of that, significant legal issues remain. If you talk to major chains like Businessland, they'll tell you they are also concerned about the legal issues. We do not believe PS/2-compatible introductions in mid-1988 will, by themselves, create a significant increase in IBM or third-party sales until those lingering legal questions are clarified. IBM hasn't chosen to clarify them, and that has caused a delay in the popularity of those machines. Meanwhile, our customers are not beating down the doors for PS/2 compatibles.

There are reports that the first companies to introduce a Micro Channel compatible might be Taiwan firms hoping to make a splash in the U.S.

Who do you think has bought the PS/2 so far? Traditional IBM corporate customers. Do you think they would run out and buy untested products that have legal issues hanging over them? Those who are buying now are those who were promised seamless integration from PCs to mainframes. They are big corporate customers. A giant company is not going to buy from Multitech, say, just because they are 15% cheaper.

By making it tough, legally, to perpetuate the PS/2 standard, isn't IBM playing it risky? Doesn't the PS/2 need clones to survive?

That seems like the case. For every month IBM delays clarifying its legal policies, it will make the PS/2 less of a standard. This

Continued on page 35

All aboard at Quadram

Quad386XT seen as bargain alternative

BY JAMES A. MARTIN
CW STAFF

When microcomputers based on Intel Corp.'s 80386 chip began appearing in 1986, many users wanted to upgrade but could not justify getting rid of their existing personal computers in favor of more expensive, faster models. At the same time, some users found they were approaching memory and performance limits with their current systems.

To many, the solution arrived in the form of add-in boards like Quadram Corp.'s Quad386XT. Quadram's board, which began shipping last October, promised the power of a 386 machine on an IBM Personal Computer or PC XT compatible via an enhancement card. Best of all, a user could trade in his Intel 8088-based system for a 386 for less than $1,000.

With many 386 systems priced at around $5,000, users were wary of upgrading.

"Price was the main factor in not buying a 386 machine," said Terry Swart, technical service engineer for Cain Chemical, Inc., a chemical manufacturing company in Ponca City, Okla. "With the 386XT, we could buy four boards for $3,600 instead of [spending] $5,000 for one 386 system."

PC priorities

The investments made in existing IBM PCs were another reason for holding onto the PC XTs. "I looked at the prices of 386 systems, and even in discount houses they were well over $2,000. The problem was, I already had a substantial investment in my existing XT," said Robert Tolz, a corporate and tax attorney in New York.

"I had an old PC and didn't know if I should dump it or not, although I was reluctant to let it go because of the peripherals that worked with it. They would be expensive to replace as well," said Rodger Knaus, a partner at Instant Recall, a Bethesda, Md.-based custom software programming firm. "So the accelerator board really filled a need."

The desire to upgrade the PC XT was fueled both by software vendors, whose application programs increasingly required more memory and processing power, and IBM itself, by discontinuing the XT in 1987.

In addition, by 1987 the 8088-based PC was already two generations behind the Intel 80286 and 80386 processors — enough to fuel uncertainties among those companies preferring to live on the leading edge of technology.

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Cain Chemical purchased four Quad386XT boards last year and plans to double that number in 1988 because of the firm's increasing use of more powerful software for computer-aided manufacturing applications.

"We started to bump up against speed problems with Symphony, Dbase III and Framework — just about everything seemed to be slowing down on our XTs," Cain Chemical's Swart said, referring to products from Lotus Development Corp.

Continued on page 35

DBMS advances to key breakthroughs in SQL

BY FABIAN PASCAL
and RICH FINKELSTEIN
SPECIAL TO CW

First in a two-part series.

Performance is a major consideration in data base management system decisions, as evidenced by the number of benchmarking efforts now being undertaken. The performance of data base applications is affected by many factors, including the hardware, the CPU, the memory, the operating system, the data base management software and the nature and mix of applications and their concurrent use.

Within one application environment, on a given hardware-software platform, improvements in response time have traditionally been achieved by system administrators, application developers and even end users. They manipulate storage structures, indexing and procedural code to squeeze desirable performance out of the DBMS.

It is becoming increasingly clear, however, that in most environments this is problematic. Different queries and applications written against data bases require different structures and access strategies. Constant and rapid changes in both data and processing needs strain even the most competent of users and make performance tuning difficult and expensive.

C. J. Date, cofounder of the Codd & Date Consulting Group, cautions that tuning done by users may not ultimately achieve the best performance, because users do not have all the necessary up-to-date information and are not patient with the need to continuously retune. Clearly, machine performance cannot be pursued cost-effectively in the long run without proper consideration of human productivity. Some balance between the two must be struck.

It is for this reason, in part, that relational technology is quickly gaining ground as a data base management foundation. Embedded in E. F. Codd's 12 rules of relational fidelity is the critical concept of "physical data independence," which requires DBMSs to insulate queries and applications from the internal representation of data.

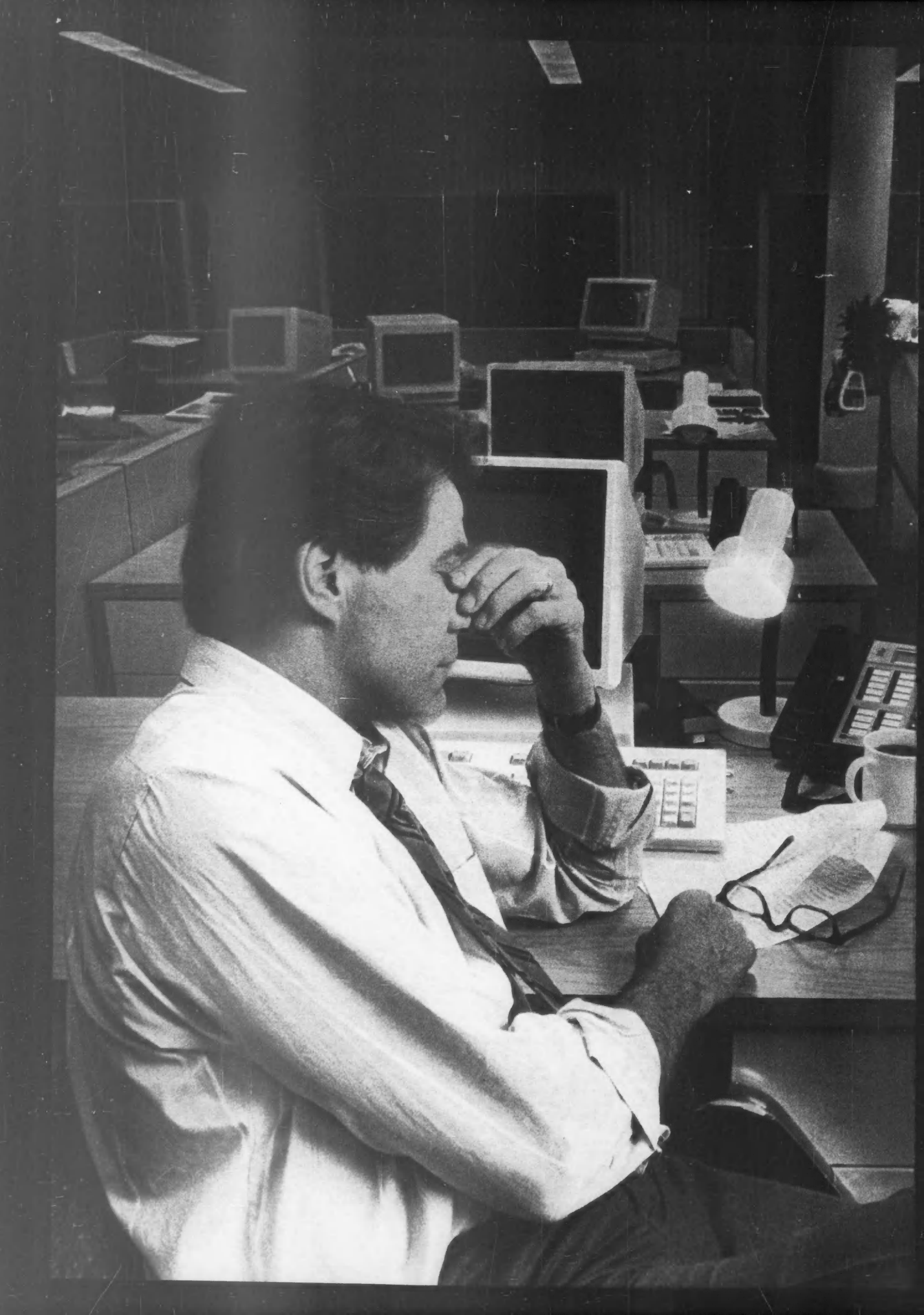
To be productive, users should interact only with the logical level of their data; namely, tables, columns, rows and values, which they can readily understand and manipulate. If properly supported, "physical data independence" shifts some of the burdens of maximizing performance from users over to the DBMS.

Take a look at what a relational DBMS does when a user or an application issues an SQL data request:

- Parsing.
- Syntax checking.
- Name lookup, specifically existence checking, authorization checking, view composition and integrity checking.
- Information gathering.
- Data access decision.
- Execution.

The step that most affects performance is the data access decision; the selection of the best possible path to the data. Relational DBMSs have software modules called optimizers that specialize in this task, insulating users from it. To illus-

Continued on page 35



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Meanwhile, I've got a sales guy here waiting to close a half-million-dollar deal, and he's screaming 'why didn't my order go through.' I have no clue. My technical staff is home watching the game. And all I keep thinking is whatever happened to that word reliability? If I could have anticipated the problem, at least I would have had a chance. As far as I'm concerned, somebody at headquarters better start talking to AT&T about getting a network management system. Or they can find themselves a new whipping boy.

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Floppies

CONTINUED FROM PAGE 29

of sales and marketing for special products. The increase will help eliminate track errors and reduce interchange problems, he added.

Maxell has also reduced signal noise by creating a process to uniformly disperse magnetic particles within the floppy diskette's binder. In addition, an improved diskette liner is said to lift dirt and dust away from the recording surface and reduce errors.

The new series was developed in response to changes in how microcomputers are used, noted David Berry, new products development manager. Since laptop and other portable computers are used in a variety of nonoffice settings, floppy diskettes had to be enhanced so they could perform in a more hazardous environment, he said.

Braving the elements

"We've upgraded our disks in response to the changed environment — where humidity and temperature changes, as well as contaminants, are more prevalent," Berry pointed out.

Maxell's approach differs greatly from that of Verbatim Corp., which recently announced a line of diskettes that use a Teflon topcoat to prevent contaminants from damaging the recording surface.

Berry said a disk drive's read/write head could remove the Teflon coating from Verbatim's floppies, resulting in additional contamination and possible interference with the signal.

Maxell said with the exception of 3½-in. diskettes, all members of the RD family should be available this month for approximately the same price as Maxell's existing line. A box of 10 floppies currently retails for between $9.99 and $12.99, a company spokesman said.

A box of 10 3½-in. floppies will cost 3% to 4% more than the current product line because most are manufactured in Japan and are subject to significant increases in the value of the Japanese yen relative to the dollar, the spokesman noted. The new 3½-in. floppies are expected to retail for between $19.99 and $24.99, he added.

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Scannell

CONTINUED FROM PAGE 29

gained any advantages, even though it had a hand in developing the multitasking operating system.

The purpose of the upcoming Compaq OS/2 announcement is threefold, according to Stimac: first, to talk about what it will be delivered; second, to show not only that IBM's OS/2 works well with Compaq's machines but to show off Compaq's built-in performance advantages; and third, to demonstrate how well popular third-party applications will run.

The one thing Stimac said he found surprising is that no one has been beating Compaq's door down to get their hands on OS/2. "We feel it is important to get it out there so developers and users can evaluate it. But is anyone beating down our doors to get it? Clearly not. But that's to be expected, because there aren't any applications out there that require it."

Tooling along with SQL Server. Sybase, the folks that made it possible for Microsoft and Ashton-Tate to make their SQL Server deal last month, announced last week it will port and distribute its Datatoolset to OS/2. SQL Server used in combination with Datatoolset will provide developers with all they need to put together work group applications that can talk with mid-range systems, according to the boys from Berkeley.

Would Bill Gates Excel at this? Lotus has created a nice little diversion called the Lotus game. It's a board game (system requirements: two or more people) that challenges the player to ship and sell a Lotus product around the world by gaining approval from the company's manufacturing, finance, research and development and marketing departments. I wonder if Bill Gates could pick up some pointers on how to get OS/2 Extended Edition to market any quicker. Come to think of it, could Lotus pick up something on getting OS/2 products to market quicker?

Could you pass the sweet and sour, Jim? A couple of weeks ago, the Associated Press ran a story on Lotus's opening up a 13-member sales office in Bellevue, Wash., the backyard of archrival Microsoft. The heads of the two firms said there is nothing personal in the move. "There is no personal animosity," Lotus boss Jim Manzi said. "I am coming out [to Seattle] in March. I think I'm having dinner at his [Microsoft's Bill Gates'] house." Gates said he is curious about the new office but doesn't feel threatened.

Maybe after dinner they can sit around and play the Lotus game, with Bill trying to gain approval from Lotus management to market a product called, say, Excel, and Jim doing his best to undermine that effort.

Quote of the week. "Well, I don't feel bad about it," responded Microsoft Chairman Bill Gates when asked if it wasn't a bit awkward for his firm to refer customers to Ashton-Tate to buy the other half of the Microsoft/Ashton-Tate SQL Server.

Scannell is *Computerworld*'s senior editor, microcomputing.

Qureshey

CONTINUED FROM PAGE 31

doesn't mean IBM will not have its share of the market, of course. But meanwiule, compatible manufacturers will continue to grow beyond the performance of IBM.

Like the Premium/286, have you incorporated any designs into the Premium/386 that will enable you to upgrade that machine as well?

When we came out with the 286, the 386 was already on the horizon, so it was more feasible to take that into account. Expanding the Premium/386 is part of the game plan, of course, but I couldn't say if it would take a 486 card or not. But we do have enhancement features in mind.

What is your reaction to Computer Automation, Inc. hitting up board companies for royalties on its patent?

We don't see that as a major issue, and it's not something we can discuss at this time. We have a good relationship with them and have had correspondence with them on that issue.

How will those royalties affect the cost of add-in boards for the PS/2, for AST and for the end user?

Again, it's too early to say, and we couldn't divulge the discussions we are having.

AST's most recent revenue report looked very positive, but net income had taken a beating. What is the situation now?

The September quarter earnings had reached the bottom, but our net income is also very positive for the quarter that just ended. We expect to earn 10 to 15 cents a share for the December quarter, and that's just a start.

> "BESIDES IBM, most of the major players realize the value of standards and cooperation between software and hardware vendors."
>
> SAFI QURESHEY
> AST RESEARCH, INC.

As our volumes increase, we are able to bring our manufacturing costs down. Also, our new products — like the Premium/386 — will have significantly higher margins than the 286. The board business is rebounding; we've been through the worst of it and probably have more PS/2 add-in products than any other company. As PS/2 shipments increase, our add-in products should relate to those sales, especially when new applications for OS/2, which require more memory, come online.

What do you see as the biggest challenges facing AST, and the micro industry in general, in 1988?

We will see new companies coming out with brand new applications for the faster machines and the PS/2s. In terms of micro applications, we've really only scratched the surface. What we've had so far is really just word processing, spreadsheets and data bases, but there should begin to be applications in [computer-aided design], engineering or small-business multiuser environments.

Besides IBM, most of the major players realize the value of standards and cooperation between software and hardware vendors. The key beneficiary, of course, will be the end users. They can make decisions more intelligently, and we will work to make sure our customers get compatible hardware and software that works together to solve their problems.

Quadram

CONTINUED FROM PAGE 31

and Ashton-Tate Corp.

"The programs had become so large that a simple 8088 machine couldn't handle them. But what was I going to do with all the old XTs? We had to go with a turbo board, and Quadram looked like the best on the market," Swart continued.

As a means of achieving 386 performance at low cost, the Quad386XT was rated as a worthwhile investment by all users queried. However, some discovered hardware compatibility problems while others said the board was more of a temporary solution and not a valid replacement for a 386 system.

Knaus purchased a Wico Distribution Co. Smart Board keyboard for his XT. He said the Quadram board does not recognize input from that keyboard during the read-only memory BIOS initialization process. As a result, Knaus keeps two keyboards by his XT: an IBM keyboard, which is used during booting up, and the Wico keyboard, which replaces the former and is used for inputting data.

Knaus said he was also disappointed when he added the Quad386XT board to a PC with 256K bytes of random-access memory provided mostly by add-on memory cards. He assumed that the Quad386XT, with its 1M byte of extended memory, would assign enough of its memory to the system's RAM to bring it up to 640K bytes. Instead, he found he still had a 256K-byte PC but with 1M byte of extended memory.

"I had to go out and buy another memory board to bring the system up to 640K RAM," Knaus said. The Quad386XT uses the extra memory to design an on-board virtual PC, and the additional memory is not actually used by the board after the boot-up process, he added.

"The 640K RAM that I had to get with another card is never actually used after the boot-up, it's just there so the Quad386XT can design a virtual PC on board. It has to be there so the 386 board can create fast 32-bit memory on the motherboard," he added.

Overall, Knaus said the Quad386XT "fills a definite niche for people who want to speed up an existing machine." He purchased the board as an interim 386 solution while awaiting 386 price drops and performance improvements.

Users said that, in general, obtaining a 386 system for a small price is worth any minor drawback. "It's like buying a 386 machine for $800," Swart said. "Although you still don't have the high-speed machine, this board will keep us from having to upgrade for at least two years. If it can do that for $800, then it's fantastic."

DBMSs

CONTINUED FROM PAGE 31

trate, for a table called Persons with each row representing personal data and both the Deptno and the Salary columns indexed, the SQL query:

```
Select *
From Persons
Where Deptno = 'All' and Salary >
25000
```

could be executed by accessing the data using the Deptno index, the Salary index or by scanning the whole table. An SQL back end receives and understands requests in terms of sets and set operations rather than row-by-row. Therefore, it can apply intelligent algorithms to information on storage structure, index availability and table statistics dynamically maintained in the system catalog to estimate the response times of available access strategies and select the most efficient one.

Assumptions

It has been assumed that human intervention is necessary for such decisions. Consequently, traditional DBMSs usually collected neither statistical data nor ad hoc repositories (such as catalogs) to store for the optimizer. Moreover, nonrelational data base languages tend to be third generation, processing data one record at a time.

Without the benefit of the high-level table operators of relational languages such as SQL, an optimizer cannot analyze the total data intent of a request and evaluate the efficiency of available paths. The user must select and explicitly specify one up-front, which is not cost-effective in the long run.

This has important implications. For good performance, vendors should concentrate their competitive efforts on providing a broad range of flexible storage structures, good system catalogs and intelligent optimizers to eliminate the lingering myth that relational systems are inherently poor performers.

In addition, users should evaluate performance in terms of the degree of human effort necessary to achieve and maintain it. Proper relational design of data bases is necessary to take full advantage of optimization.

System base optimization is particularly valuable in the microcomputer environment. Personal computer users are even less used to digressing into programming and tuning activities than their minicomputer and mainframe counterparts.

In addition, the distinction that exists between administrators, developers and end users cannot always be relied on or justified.

Well rounded

Ideally, we need products that perform consistently well across the whole range of data base operations. Commercial reality, however, does not offer such luxury at this early stage.

Optimization research is a complicated field: Still in its infancy, resources are not unlimited, and vendors may differ in their priorities, expertise or targets. Consequently, relational DBMSs vary in their performance profiles.

For example, production systems may emphasize fast insert, update and delete operations. On the other hand, retrieval response time may be particularly important in decision support environments. Ad hoc interrogation of data bases by end users cannot afford optimizers that can be easily fooled by how users specify queries. Applications that involve heavy input of external data should be sensitive to the quality of the loading capabilities provided.

In testing PC SQL implementations for performance, we have found that despite the youth of the products and the 640K-byte DOS constraint, relational performance should no longer be questioned. At the same time, products do vary in performance and in the sensitivity of their optimizers to index configurations and operation types.

This reinforces the need to pay particular attention to the requirements of the specific environment for which a relational DBMS is selected.

Next week: Examples from several PC SQL products.

Pascal is an independent analyst based in Washington, D.C., and is affiliated with the Codd & Date Consulting Group, specializing in relational technology and SQL on microcomputers. Finkelstein is a senior consultant with Codd & Date.

The Best Ideas Under the Sun are at SUGI 13

SAS® Users Group International announces its thirteenth annual conference, March 27-30, at Marriott's Orlando World Center, Orlando, Florida. Conference co-chairs: Gerry Hobbs and Bob Hamer

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You can also take advantage of PC hands-on workshops, pre-conference training courses, tutorials, roundtable discussions, posters, a problem solving booth, software and hardware demonstrations, and special-interest group meetings.

To register, contact: SUGI 13, SAS Institute Inc., SAS Circle, Box 8000, Cary, NC, 27512-8000; telephone (919) 467-8000.

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NEW PRODUCTS

Systems

Sritek, Inc. has announced an NCR Corp. Tower-compatible multiuser system capable of supporting up to 48 users.

The system, called the **Max-20**, is object-code and media compatible with NCR Tower systems running Unix or Ryan-McFarland Corp.'s RM/COS operating systems. According to the vendor, it can also run standard DOS applications.

The Max-20, based on the NCR Model 3279 platform, is equipped with an 8-MHz Intel Corp. 80286 processor and a Motorola, Inc. 68020 application processor. A standard system includes a 140M-byte hard disk, a 60M-byte cartridge tape, a 1.2M-byte floppy disk, Unix System V, DOS 3.1, a monitor, a keyboard and a 1,200 bit/sec. modem.

Prices range from $7,995 to $10,995.

Sritek, 6615 Snowville Road, Cleveland, Ohio 44141. 216-526-9433.

Software applications packages

A Lotus Development Corp. 1-2-3 add-on designed for forecasting trends has been announced by **Wisard Software Co.**

The **Wisard Forecaster** is said to automatically determine seasonal patterns as well as upper and lower bounds, minimum and maximum values, mean and standard deviation and slopes. Also included is math coprocessor support.

The Wisard Forecaster runs on IBM Personal Computers with 1-2-3 Version 2.0 and higher. It costs $99.

Wisard Software, P.O. Box 19730, Green Bay, Wisc. 54307. 414-436-2341.

Software languages

A portable, object-oriented, high-level assembly language programming tool with C-link syntax has been announced by **International Microcomputer Software, Inc.**

Risc is said to contain an object-oriented messaging kernel with source code and language extension capabilities.

The initial release runs on Intel Corp. 8086-, 80286- and 80386-based machines. It costs $79.95.

International Microcomputer Software, 1299 Fourth St., San Rafael, Calif. 94901. 415-454-7101.

Software utilities

Nine to Five Software recently announced a report generation system for Apple Computer, Inc.'s Hypercard information management environment.

Reports for Hypercard features row and column reports, free-form reports, multilevel sorts, multiple criteria card selections, column and page breaks, calculated fields, totals, subtotals, averages and math and string functions. Report layout, field selection and calculations are performed with the on-screen report builder.

Reports for Hypercard is priced at $99.

Nine to Five Software, P.O. Box 915, Suite A-D, 231 W. Main St., Greenwood, Ind. 46142. 317-887-2156.

Development tools

A compiler for Ashton-Tate Corp.'s Dbase III Plus has been announced by **Dbfast, Inc.**

The compiler, called **Dbfast**, is said to reduce the size of programs and to increase compiling speed. According to the vendor, minimum .EXE file size is 1K byte, with a typical program size of 5K to 10K bytes.

Dbfast uses standard Dbase III Plus commands, functions and data files and comes ready for use on local-area networks. Users can compile a program using Dbfast or can run the program in interpreter mode using Dbase without modification.

Dbfast costs $149.

Dbfast, Suite 2857, 1420 N.W. Gilman Blvd., Issaquah, Wash. 98027. 206-392-0368.

XEROX

The new 4075 intelligent printing system. A brief case history of what its capabilities can do for your data center.

Xerox presents an open-and-shut case for the new 4075 intelligent printing system. In brief, it's the electronic printing system that's specifically designed to meet the needs of a medium-size data center.

The 4075, unlike other printers, has built-in intelligence that takes the bulge out of your work load without putting a bulge in your budget. Instead of piles and piles of fanfold paper filling and spilling everywhere, the 4075 prints on standard cut-sheet paper. Its 2-up capability lets you print the information contained on two sheets of fanfold paper onto one 8½" by 11" page. The 4075 not only turns out caseloads of documents at up to 75 pages per minute, it's designed to do it about as reliably and economically as any impact printer. Most important, it can give you quality and flexibility that no impact printer can. For instance, the 4075 can electronically store forms, signatures and logos. That means you can turn blank paper into completed documents in one pass and say good-bye to preprinted forms forever. And with 250 built-in fonts, it gives documents a striking appearance no impact printer can match.

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DATA STREAM

Clare Fleig

Too little, too late?

When IBM unveiled its 4M bit/sec. Token-Ring network in October 1985, it promised to deliver a 16M bit/sec. version. According to IBM's initial statement of direction, the 16M bit/sec. Token-Ring would be used as a backbone for departmentwide or companywide networks with several smaller 4M bit/sec. Token-Rings attached. The smaller versions would be used for small departments and special-purpose applications.

The catch was that while IBM was willing in 1985 to tell users that the faster network was on the way, it wasn't willing to say when. Last November, Ellen Hancock, president of IBM's Communication Products Division, broke IBM's silence on the status of the 16M bit/sec. Token-Ring and committed to deliver the product within two years.

To its credit, IBM did, at the November briefing, try to clear up some of the confusion about where the 16M bit/sec. Token-Ring will fit in the data communications scheme of things. IBM has outlined three strategies for the high-speed version of the Token-Ring: as a backbone network for the attachment of smaller 4M bit/sec. Token-Rings, as a channel-to-channel link between mainframes and for utilization by large corporate departments with high-speed network requirements.

These are by no means the traditional LAN applications now handled by the lower speed

Continued on page 38

Colorizer hopes LAN makes pockets greener

BY KATHY CHIN LEONG
CW STAFF

MARINA DEL REY, Calif. — The people at Color Systems Technology, Inc. have electronically dabbed rosy color on the cheeks of Shirley Temple in 13 of her films and given Santa a scarlet overcoat in *Miracle on 34th Street*. Now, three years and 20 movies later, the company is embarking on a networking project that it hopes will advance its competitiveness in the colorization marketplace.

A Transmission Control Protocol/Internet Protocol (TCP/IP)-based Ethernet local-area network from Communication Machinery Corp. links Digital Equipment Corp. Microvax IIs and Silicon Graphics, Inc. Iris graphics workstations. This configuration should accelerate the firm's colorization output by three to 3½ times, according to Color Systems' Executive Vice-President Joe DeVita.

"Instead of making three or four movies a month, we want to be able to do 10," added Mike DiCarlantonio, manager of engineering at Color Systems and a former MIS manager at Able Computer, Inc. in Irvine, Calif.

In the colorization process, color artists add hues to 1-in. film tapes that are later converted into videocassette film. Currently, this process is performed through the use of separate video networks, computer networks and Color Systems' proprietary color computer and encoder, which combines the video images with the computer data in the final stages.

Not surprisingly, to take a film from inception to completion requires three to four months of work. It takes an exacting four to eight weeks just to do the actual color conversion.

Color me fast

But the new Ethernet network and computer gear, valued at $4.3 million, will make a signifi-

Continued on page 38

VSATs rise again

Spate of rollouts may end technology's nap

BY ELISABETH HORWITT
and MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The usually somnolent very small-aperture terminal (VSAT) satellite market bestirred itself in recent weeks as three major vendors made product announcements.

Typically marketed as low-cost, low-capacity alternatives to the older satellite dish technology, VSATs have had disappointing sales in the last few years, according to John McQuillan, president of McQuillan Consulting Co. in Cambridge, Mass.

"VSAT is a promising technology that got oversold by vendors before it matured," McQuillan said. So "there are a lot of gun-shy customers whose VSAT pilots didn't work."

At last week's Communication Networks '88, or Comnet, conference here, NEC America, Inc. in Herndon, Va., announced what it claimed is the first VSAT product to support T1 links.

The Nextar CL TSAT is said to support transmission rates of up to 2M bit/sec., or 1M bit/sec. in each direction. TSATs can communicate with one another directly rather than through a central hub, according to Philip Arcoria, NEC's national sales and marketing manager. A 3.6-meter antenna, which NEC recommends as a minimum size, is priced at $30,000, including cable and a modem. A typical VSAT costs $10,000, according to industry sources.

NEC will market the TSAT as an alternative to dedicated terrestrial T1 lines, which cost $15,000 to $20,000 per month, Arcoria said, "so the payback pe-

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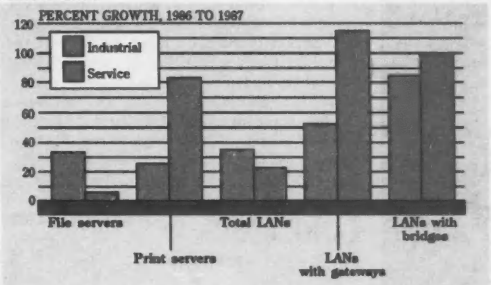
Inside

- NSA claims its turnkey system ties PCs, SNA hosts. Page 40.
- Networking firms ally in order to diversify. Page 40.
- Gandalf offers voice/data transport access. Page 42.

LAN connections on the upswing

Industrial firms installed more LANs; service companies, more links between LANs



INFORMATION PROVIDED BY THE DIEBOLD GROUP, INC.
CW CHART

Service firms take lead in LAN growth

Service companies are seeing a greater growth in local-area networking equipment installations than manufacturing companies, according to a recent study by The Diebold Group, Inc., a New York consulting company.

Industrial firms have approximately 26 networked workstations per 1,000 employees — up 30% from 1986 — compared with service companies, which have 24 networked workstations per 1,000 employees — an increase of 69% from the previous year.

Forty percent of all industrial companies rely on the telecommunications department to manage LANs, while 35% use their data processing departments. At service companies, 29% said their DP department handles LANs, compared with 28% that said it was the telecommunications group's responsibility.

Office automation departments handle LANs at 13% of all industrial firms and 21% of all service companies, the report said.

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The performance of your mainframes and minis is improved by offloading datacomm overhead onto the Forest Computer gateway. Each gateway is powerful enough to support up to 500 virtual terminal sessions. For high speed data transmission, the gateway supports IEEE 802.3 and Ethernet LANs as well as serial transmission speeds up to 56K bps.

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For more information write to Forest Computer Inc., 1749 Hamilton Road, Okemos, MI 48864 or call (517) 349-4700.

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Fleig

CONTINUED FROM PAGE 37

Token-Ring or, in a pinch, the PC Network. The applications IBM has specified for its higher speed Token-Ring indicate that it is more likely to be marketed by IBM as a wide-area network (WAN) for use with primary applications — for example, the interconnection of buildings in a campus-type setting, such as Project Andrew at Carnegie-Mellon University in Pittsburgh — or the multiring configuration designed by IBM for Agway, Inc. in DeWitt, N.Y.

But even with this WAN positioning, the faster version of the Token-Ring is really too little, too late.

In the early 1980s, the promise of a 16M bit/sec. Token-Ring looked like a strong alternative to other young networking options — notably the 10M bit/sec. Ethernet introduced in 1979. Had IBM been able to capitalize on that promise then, its share of the LAN market segment would undoubtedly be higher that it is today.

Pass the catch-up

Instead, IBM is being forced to play catch-up with the rest of the industry. Other technologies, such at T1 links, are handling applications that IBM had originally earmarked for the Token-Ring. Also, other vendors — notably Proteon — are providing faster and more innovative communications solutions using token-ring technology. These include the use of microwave signals and fiber-optic token rings running at 80M bit/sec. or higher.

Fiber-optic networks from vendors such as Proteon and Fibercom can be configured as high-speed backbones that link multiple lower speed networks located in different parts of a building or campus.

The movement toward the use of fiber optics should be further encouraged by the development of the Fiber Distributed Data Interface (FDDI) fiber-optic networking standard, which should be finalized early this year.

Fiber is already being optimized in many large-scale network projects, and its reach will be extended as the cost of fiber-optic components and connections continues to decline. IBM, of course, has not ignored fiber. The company specifies fiber as Cabling System Type 9 (running at 4M bit/sec.) for the Token-Ring, is active in the FDDI standards-setting process and has committed to supporting the final version of the standard.

Despite this support, IBM views fiber as an alternative to its mainstream networking scheme. The 16M bit/sec. Token-Ring, for example, is expected to run primarily on IBM Cabling System Types 1 and 2 — data-grade shielded twisted-pair wire.

> HAD IBM been able to capitalize on its promise of a 16M bit/sec. Token-Ring in the early '80s, its share of the LAN market segment would undoubtedly be higher than it is today.

Old news

But by late 1989, when the 16M bit/sec. Token-Ring is scheduled to appear, fiber-optic-based networks will be a primary option for connecting to and replacing both Ethernet and Token-Ring-based networks.

At the same time, today's Token-Ring users — because of the demands of remote data processing, 32-bit microcomputers and sophisticated application programs written for multiuser, multitasking operating environments like IBM's OS/2 — will require higher speed connection for day-to-day operations.

Instead of a network backbone as IBM originally planned, under that scenario, the 16M bit/sec. Token-Ring may be best suited as a higher speed alternative to the aged 4M bit/sec. Token-Ring.

Fleig is director of systems research specializing in local-area networking and IBM communications for International Technology Group in Los Altos, Calif.

Colorizer

CONTINUED FROM PAGE 37

cant difference in both speed and productivity. While the video networks will be used to view images, the computer networks will be used to select colors and mark the areas for coloring. The colorists must make sure the colors are appropriate and that they do not bleed outside the intended objects.

In each of Color Systems' 18 production rooms, five Apple Computer, Inc. Macintosh 512K micros are linked into a simple serial network attached to the controller, an Intel Corp. 80186-based machine built on-site. The firm has grown impatient with slow response times caused by transmission speeds of only 9.6K bit/sec., DiCarlantonio said. In addition, the Macintoshes do not have the CPU power to process 30 frames per second, a goal that is part of Color Systems' strategy to increase productivity.

"We took the first two years to set up a system and learn what it could do," DiCarlantonio said. "Now we know what we want and how it can be improved."

When all the production rooms are revamped with the new equipment in March, one Macintosh will be used as a front-end operator console with four Iris workstations in the background to store and process the color data. An electronic diffusion system from Datacube, Inc. will be used to diffuse shapes and help artists blend colors.

A Microvax II also will be on the network, functioning as the server and router. The 10M bit/sec. baseband network requires Communication Machinery's ENP/50 boards for the Microvax, which communicate with Ethernet boards already built into the Iris computers.

"We can color in real time and animate in real time," DiCarlantonio said. The improved speed of the network is also a plus for colorists, who can get immediate feedback on their work, he added. "A 10- to 12-second shot could take 15 minutes to color, and you would have to wait until you were done to see it. Now, you can see it right away."

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SNA-PC system cuts out the middleman

BY PATRICIA KEEFE
CW STAFF

LAGUNA HILLS, Calif. — Network Software Associates, Inc. (NSA) has introduced a turnkey system said to link personal computers to IBM Systems Network Architecture (SNA) networks and hosts.

NSA claimed Adaptasync is the first product to enable IBM Personal Computers, compatibles and laptops to talk to the SNA environment without expensive synchronous hardware.

SNA does not support asynchronous, NSA said. Ordinarily, a PC running under SNA must be equipped with a synchronous modem and an IBM Synchronous Data Link Control (SDLC) adapter, the vendor added.

However, the vast majority of IBM PCs and Personal System/2s have serial ports, NSA claimed, adding that asynchronous modems are less expensive and more common.

Adaptasync supports all major SNA communications facilities over asynchronous lines, including: cooperative processing, for IBM's LU6.2/Advanced Program-to-Program Communications; interactive host communications, for IBM's 3270; batch-file transfers, for IBM's 3770/RJE; and specialized program-to-program communications mode, for IBM's LU0.

The Adaptasync line supports four different software products that run on the microcomputer to implement the desired protocol: AdaptSNA LU6.2, AdaptSNA RJE, AdaptSNA 3270 and AdaptSNA LU0.

NSA claimed each package conforms to IBM's Systems Application Architecture (SAA),

BIT BLAST

Net firms ally to diversify

Micom-Interlan, Inc. in Boxboro, Mass., and **Synoptics Communications** in Mountain View, Calif., have agreed to resell each other's networking products and to eventually integrate the two technologies. Micom-Interlan supplies intelligent IEEE 802.3 Ethernet controllers for a variety of systems, and Synoptics sells Lattisnet, a wiring system that reportedly implements 802.3 Ethernet on unshielded twisted-pair wiring.

Meanwhile, Micom-Interlan's parent, **Micom, Inc.** in Simi Valley, Calif., has agreed to purchase from **Amnet, Inc.** software that is the basis of Amnet's Nucleus 7400 line of packet-switching systems. Micom plans to incorporate the software into its Distributed Network Processor line in order to provide a compatible, consistently managed line of packet-switching equipment, according to the company.

Tymnet, a McDonnell Douglas Network Systems Co. subsidiary, announced last week that it will expand its product line with offerings from two other vendors. **Gandalf Data, Inc.'s** Starmaster and PACX 2000 data switches will be marketed under the Tym Switch label as a low-cost way for large numbers of terminals to access Tymnet's wide-area networks, the vendor said.

Digital Communications Associates, Inc.'s System 9000 multiplexer, which will also be resold by Tymnet, will provide cost-effective bandwidth management for customers who want to send a combination of voice, data and image over Tymnet private network links.

Tymnet also announced recently a synchronous 9.6K bit/sec. version of Tymdial X.25, a service that provides dial-up access to the Tymnet public data network. Tymdial X.25 currently offers 9.6K bit/sec. asynchronous and 2.4K bit/sec. access to Tymnet.

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NFS is a trademark of Sun Microsystems

which allows software to be moved from one hardware environment to another without modification.

Pricing for the Adaptasync controller starts at $1,995. The AdaptSNA software packages are priced as follows: LU6.2/APPC costs $285, RJE is priced at $785 and 3270 costs $585. No price was made available for the LU0 package.

VSATs

FROM PAGE 37

riod is less than 18 months." The dishes also provide a quick way to set up a T1 line for users who cannot afford to wait six to 18 months for a terrestrial line, he added. The TSAT's direct dish-to-dish links could be a breakthrough, McQuillan said, since they eliminate the need for a hub, which can cost more than $1 million.

Also at Comnet, Scientific Atlanta, Inc. introduced the Intelligent VSAT network, a satellite-based network system said to incorporate CCITT X.25 packet-switching technology.

By employing X.25 rather than more traditional high-level data link control protocols, Scientific Atlanta's VSATs can support more easily a variety of protocols, such as asynchronous standards and IBM's Systems Network Architecture, said David Fellows, vice-president of strategic operations. In addition, users can back up or extend the VSAT network by connecting it to a public or private X.25 network, Fellows said.

The network hub dynamically allocates 56K bit/sec. channels among VSATs, dividing up a channel among a group of VSATs or dedicating the bandwidth to one terminal on the basis of need, Fellows said.

Scientific Atlanta said it will sell VSAT dishes for approximately $10,000 and the network hub for between $750,000 and $1.5 million, depending on configuration. An IBM Personal Computer-based network management system featuring graphics, network monitoring and statistics collection is included in the hub price, Fellows said. The vendor also said it will offer shared VSAT services from a hub based in Atlanta in about three months.

Battle of the bands

Two weeks ago, officials of Contel ASC, the Rockville, Md.-based satellite communications unit of Contel Corp., set forth plans to develop a VSAT data networking service that merges C- and Ku-band technologies.

The service constitutes the first fruit of Contel's recent acquisition of VSAT equipment vendor Equatorial Communications Co. and the VSAT operations of Communications Satellite Corp. (Comsat), Contel ASC said. These acquisitions give the firm at least a 60% market share in VSATs, with 40,000 stations installed, officials said.

Contel will be the first vendor to blend the complementary features of Ku- and C-band communications into one hybrid network, according to James J. Sobczak, senior vice-president of the company's newly formed Data Networks Division. The network services, which will be provided through multiple shared hubs, will be priced 15% to 35% lower than those of competitors, Contel claimed.

Contel ASC can provide data customers an upgrade path from a voice-grade network using C-band technology up to a 56K bit/sec. network using Ku-band technology, officials said. While Ku-band stations provide high data rates, the signal may fade during rainstorms, according to the company. In contrast, C-band stations are reportedly vulnerable only to terrestrial microwave signals.

Contel ASC officials said they do not plan to offer a T1 service. "Users are just now getting to the level of needing 56K bit/sec. service," said George P. Roberts, president of Contel ASC. He said the T1 market is too small and has probably already been captured by fiber-optic circuits. However, Contel, a major NEC customer, has been inquiring about the vendor's T1 VSAT system, NEC's Arcoria said.

Contel ASC said the key to the VSAT market, which it expects to grow 20% a year, is to overcome resistance from communications managers and urge them to try pilot programs.

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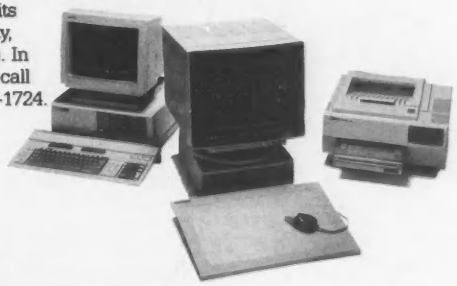

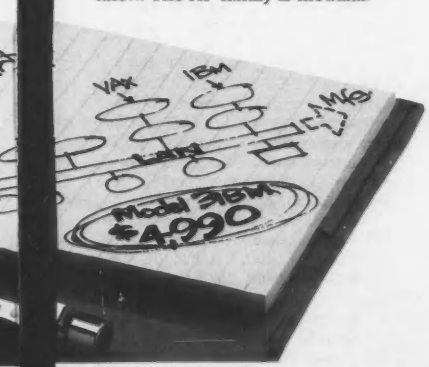

HEWLETT PACKARD

DS15722A

NEW PRODUCTS

Local-area network hardware

A token-ring board designed for use with IBM Personal System/2 Models 50, 60 and 80 using the Micro Channel architecture has been announced by **Madge Networks, Inc.**

The **MCA Ring Node** board is said to be compatible with such personal computer network operating systems as Novell, Inc.'s Netware, Microsoft Corp.'s MS-Net, IBM's PC-LAN and Madge Networks' own Netserver.

The MCA Ring Node board carries a price of $795.

Madge Networks, 534 Salem Ave. N.W., Roanoke, Va. 24016. 703-982-0638.

Network services

ITT Corp. has added high-speed digital data capabilities to its private-line service.

ITT Private Line subscribers may now transmit data over digital facilities provided by U.S. Transmission Systems, Inc. between 12 U.S. cities at a speed of 56K bit/sec. The service incorporates local Dataphone Digital Service (DDS) supplied by local Bell operating companies, ITT said.

The 12 cities are Atlanta, Chicago, Dallas, Los Angeles, Miami, New York, Newark, N.J., Orlando and Jacksonville, Fla., Sacramento, Calif., San Francisco and Washington, D.C. More cities are set to be added during the next few months.

Customers pay a flat monthly fee, averaging $2,500, based on mileage between cities and the local DDS facilities.

ITT, 100 Plaza Drive, Secaucus, N.J. 07096. 201-330-5000.

Customer-premise equipment

A rack-mount card that provides desktop access to integrated voice and data communications transport has been announced by **Gandalf Data, Inc.**

The **RM 3640 DOV** provides simultaneous voice and data transmission over existing private branch exchange wiring. The single-channel central rack-mount unit operates full-duplex at data transmission rates from 2.4K to 64K bit/sec. synchronous and up to 19.2K bit/sec. asynchronous. In addition, the card operates at distances up to 2.3 miles at 64K bit/sec. or up to 3.4 miles at 32K bit/sec. in alternate mode.

Up to 14 RM 3640 DOV cards can fit into Gandalf's 3000 chassis without redundancy.

The RM 3640 DOV costs $295.

Gandalf, 1020 S. Noel Ave., Wheeling, Ill. 60090. 312-541-6060.

Links

An enhanced version of **Co/Session**, a remote personal computer-to-personal computer communication software package, has been announced by **Triton Technologies, Inc.**

Version 2.1 uses a data compression algorithm to increase file-transfer speed. It supports data transfer rates to 38.4K bit/sec. Support is also provided for certain 9.6K bit./sec. modems, including models from Hayes Microcomputer Products, Inc. and Racal-Vadic.

Other features include an automatic billing log; session recording; color and graphic support; password protection; and remote printing.

Co/Session runs on IBM Personal Computers. It costs $249 for a two-user version.

Triton Technologies, 146 Maple Ave., Red Bank, N.J. 07701. 201-741-3232.

Modems/Multiplexers

The Hayes Microcomputer Products, Inc.-compatible **Supramodem 2400** has been announced by **Supra Corp.**

Supramodem 2400 has the ability to support asynchronous operation at 300, 1,200 and 2.4K bit/sec., according to the vendor.

Features include compatibility with the AT&T 103/212A and CCITT V.22 and V.22 protocols, automatic answer and dial, two modular phone jacks and a programmable volume speaker.

Supramodem 2400 costs $179.95.

Supra, 1133 Commercial Way, Albany, Ore. 97321. 503-967-9075.

An error correcting modem with an effective throughput of up to 19.2K bit/sec. has been announced by **Microcom, Inc.**

Designed for use with the vendor's High Density Modem System (HDMS), the **HD/9624C** reportedly supports Class 6 of the Microcom Networking Protocol (MNP).

It also supports the AT&T 103 and 212A and CCITT V.22 and V.22S standards, according to the vendor. Other features include the ability to emulate full-duplex transmission, automatic adaptive equalization, automatic fallback, autodial, autoanswer, redial and support for both asynchronous and synchronous data.

The HDMS supports up to 16 HD/9624C modems in a standard 19-in. chassis. HD/2400, HD/2400C and HD/9624C modems may be used in the same chassis.

The modem costs $1,379.

Microcom, 1400 Providence Highway, Norwood, Mass. 02062. 617-762-9310.

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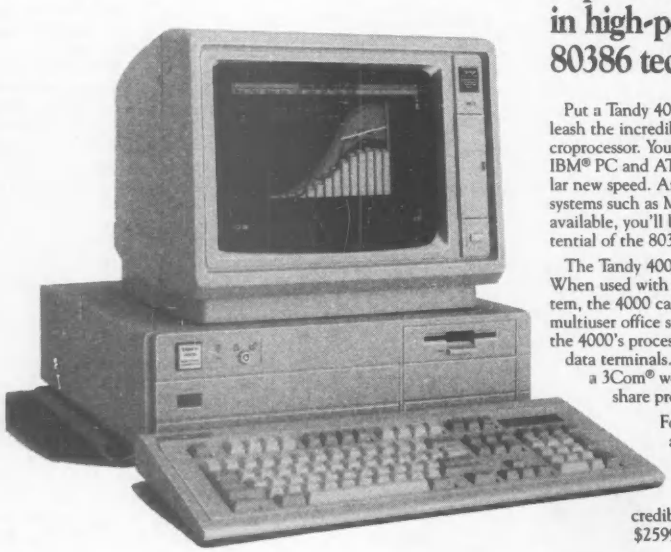

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SYSTEMS & PERIPHERALS

HARD TALK

James Connolly

Wanted: A 9370 market

The time has come for IBM to pay the dinner check or risk washing dishes for a long time.

IBM has survived on promises for more than a year as industry analysts and loyal IBM customers have looked at the IBM 9370 as an unfinished product. Observers forgave the 9370's shortcomings and compared it with DEC's Microvax I. The 9370 and the original Microvax both needed a polish through enhancements that would make the 9370 shine as the later Microvax II did.

Despite a few enhancements, the 9370 falls short of user demands. Now, the forgiving has turned into harsh criticism.

IBM admits to missing its target of 5,000 sales in 1987, and analysts are slashing their estimates for this year.

International Data Corp. (IDC) analyst David Moschella estimates 9370 shipments numbered about 3,500 in 1987, rather than the 5,000 that IBM and IDC originally expected. IDC is cutting its 1988 estimate of 10,000 to about 7,000 systems.

Selling 7,000 minicomput-

Continued on page 44

Users take hard look at 4381s

Two-stage shipments, upgrades of third generation on schedule

BY STANLEY GIBSON
CW STAFF

The third-generation IBM 4381 processors announced nine months ago are reaching the first user sites. And despite the fact that the models are widely viewed as the last kicker in the 4381's life, customers who ordered the so-called 20 series models have reported that the small mainframes will meet their processing needs for the foreseeable future.

Users also expressed satisfaction with the two-stage shipment plan IBM announced last year, in which they took delivery of an older 4381 model for later upgrade at a discount. IBM reported that it recently began to ship the more powerful 4381 models and upgrades that were announced last May.

Customers ordering before Nov. 30 received a 4381 Model 11, 12, 13 or 14 that is to be upgraded to a Model 21, 22, 23 or 24 this year. Those users are eligible for discounts of $50,000 to $70,000. IBM's announcement of shipments last month corresponded to the firm's originally stated plan to ship in the first quarter of this year.

Installed base over 5,000

According to statistics compiled by Computer Intelligence, 115 of the the new models or upgrades are on order in the U.S.; 17 were scheduled for delivery last month. According to Computer Intelligence, the U.S. installed base of 4381s in July 1987 was 5,528 systems.

A data center manager at an engineering and manufacturing company in the Midwest who currently uses a Model 14 said he will receive an upgrade to a Model 24 at the end of this month. His upgrade is not part of the two-stage shipment plan but is an enhancement to a Model 14 that was in use prior to the announcement of new models.

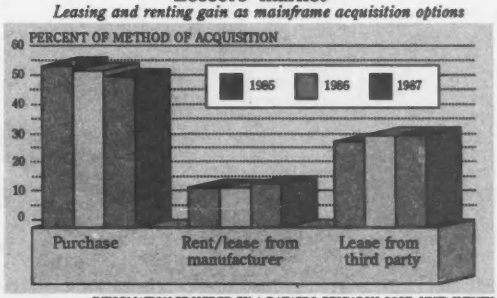
"I'm expecting some kind of price action by the end of February," he said, explaining that he might otherwise have taken delivery sooner. He said he is looking for cuts of about 15% in price, based on previous IBM pricing moves. He said he will pay about $340,000 for his upgrade and will gain about 33% improved performance. In addition to the CPU upgrade, he said, he will expand his processor's

Continued on page 45

Data View

Lessors' market

Leasing and renting gain as mainframe acquisition options



INFORMATION PROVIDED BY A DATAPRO RESEARCH CORP. USER SURVEY
CW CHART

Ametek adds processor

ARCADIA, Calif. — The Ametek, Inc. Computer Research Division recently claimed breakthroughs in node-to-node communications technologies with the introduction of its second-generation hypercube-type parallel processor.

The Ametek Series 2010, which succeeds the first-generation Ametek System 14, uses four 20M byte/sec. channels to allow each computational node

Continued on page 44

Encore fills low-end Unix gap

BY JAMES CONNOLLY
CW STAFF

MARLBORO, Mass. — Encore Computer Corp. is scheduled to open a new entry point for its line of Unix-based multiprocessors today by introducing a system with half the performance of the earlier Multimax 320.

The Multimax 310 has a base price of $89,000, compared with $143,000 for the year-old Multimax 320, and is being positioned by Encore for commercial applications such as transaction processing and time-sharing. The Multimax 310 uses the same core technology as the Multimax 320 but is offered in a smaller package with more limited expansion capability.

"It makes new markets available to us, the multiuser commercial marketplace where people want a system for under $100,000," Encore Vice-President for Marketing Frank Pinto said in a recent briefing.

In addition to being aimed at the Unix market, Pinto said the

Continued on page 44

Inside

- Nemonix announces memories for DG Eclipse, MV computers. Page 46.
- Toshiba America rolls out 24-pin dot matrix printer. Page 46.

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Connolly

FROM PAGE 43

ers would have any other company shopping for fleets of Mercedes sports coupes.

Moschella notes that if IBM had promoted the 9370 as a successor to the company's 4361, it would be considered a winner. But IBM positioned the 9370 as more — as the way for big companies to distribute processing — which means now IBM must make the same pitch with what it calls its System/3X follow-on.

Moschella says the 9370 failed to impress large companies — the segment in which IBM wants the system to distribute mainframe applications. He says major sales contracts for hundreds of 9370s are unlikely until IBM cleans up the system's image.

Shortcomings cited

Today, analysts like Moschella find the same failings in the 9370 that they graciously cited a year ago.

Moschella says there is little 9370-specific applications software, particularly under the development-oriented IBM VM. He also notes that IBM boosts the 9370 as a VM machine despite the fact that data centers tend to use IBM MVS in production.

In addition, VM remains complex for unsophisticated users, so a systems programmer is needed for tasks such as software updates.

Moschella also says the 9370's range of performance is too narrow. He cites the case of a potential buyer who was considering the two mid-range models in the 9370 line but realized that his growing needs would force him to make an expensive conversion to the 4381 family next year.

So if the big systems users are avoiding the 9370, who is buying it? The most likely group is the 4361-type of user running IBM DOS/VSE. "It isn't what IBM wanted, but these guys who have been running things like 4361s suddenly have themselves a neat new DOS machine," Moschella notes.

Connolly is *Computerworld's* senior editor, systems & peripherals.

Encore

FROM PAGE 43

Multimax 310 is intended as a strong offering in the Pick Systems Pick environment.

One analyst noted that the Multimax 310 improves what already appeared to be good price/performance figures for Encore systems but questioned the amount of interest in Unix for commercial computing.

Marty Gruhn, vice-president of The Sierra Group in Tempe, Ariz., said, "If what they say is true, it's hard to believe their systems aren't selling like hotcakes."

Gruhn said her firm's studies show little user interest in commercial Unix because of the lack of Unix-based software solutions on the market today.

Encore claimed the Multimax 310 can handle 4 million instructions per second (MIPS) in a two-processor configuration and 20 MIPS in a 10-CPU system.

Ametek

FROM PAGE 43

to communicate with other nodes. Ametek officials claimed that the 2010, which can be configured with up to 64 nodes, overcomes performance degradation problems associated with routing messages among nodes in other hypercube systems.

Designed in conjunction with scientists at the California Institute of Technology, the 2010 uses Motorola, Inc. 25-MHz 68020 microprocessors and Motorola 6881 floating-point units. Motorola VMEbus interfaces are available.

The 2010 is intended for use in various scientific and engineering applications and features Unix file compatibility. It is scheduled for beta testing during the third quarter and production delivery in October.

Prices for a four-node system start at $45,000; a 64-node system starts at $495,000.

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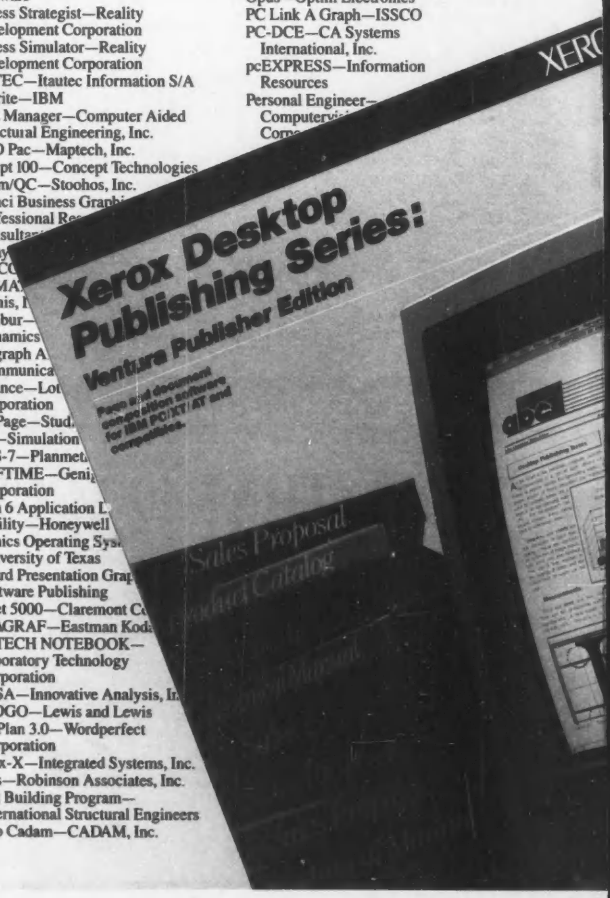

4381s

FROM PAGE 43

memory from 32M to 48M bytes.

Richard Harkness, data processing director at Hickory Chair Co. in Hickory, N.C., said he ordered a Model 22 under the two-stage shipment plan. He received a Model 12 in July and said he will receive a Model 22 by the end of March.

Harkness decided to purchase a 4381 before the new models were announced, believing that a Model 13 or 14 would provide the amount of power he needs. But when the new models and two-stage shipment option were announced, he opted for a Model 12 with an upgrade to a Model 22. He said he received a discount of the amount announced by IBM, but he declined to name a specific figure.

The new 4381 at Hickory Chair replaced two IBM 4341 processors, both of which ran IBM's DOS/VSE. The 4381 is running IBM's VM with DOS/VSE as a guest. Harkness said the Model 22 will be sufficient for his near-term needs and that he has no plans to upgrade to a Model 24.

An MIS manager for a West Coast insurance company said his firm will not take the upgrade but is instead mulling over a move from its 4381 Model 14 to a used IBM 3081 or a new IBM 3090. Eighteen months ago, his firm upgraded from a 4381 Model 2 to a Model 14, boosting power from 2.9 million to 6 million instructions per second.

William McKinley, director of MIS at Kent State University in Ohio, was running a 3081 and sought to add another. However, when the new 4381s were announced, he said, he was attracted to them — in part because, as an educational institution, he receives a 25% discount from IBM. The two-stage shipment plan and discount were also welcome, McKinley said.

"It was an interesting deal. It fit with our plans," he added. McKinley got a Model 14 in August and said he expects to receive the Model 24 in March or April. "I see three years' daylight with this," he said, indicating that this time span is ample given normal capacity planning requirements.

First in line

IBM said that The MacNeal-Schwendler Corp. in Los Angeles is the first customer to take a model in the new series. MacNeal-Schwendler, a participant in IBM's Industry Marketing Assistance Program, will use the machine to develop software for mechanical computer-aided engineering applications.

According to Mary Caetta, chief of information systems at MacNeal-Schwendler, the processor, which will contain 32M bytes of memory and 7G bytes of disk storage, is not part of the two-stage shipment plan.

The company plans to run IBM's MVS/XA and VM/CMS on the processor. MacNeal-Schwendler considered purchasing an IBM 9370 for use in development but decided against it because the 9370 cannot run MVS/XA, Caetta said. A user of IBM data centers in the past, MacNeal-Schwendler sought the convenience of its own in-house processor, she added.

Jack Tyler, director of data processing at Mississippi Valley Gas Co. in Jackson, said he received the first half of his two-stage shipment, a Model 12, in December. Tyler said he expects an upgrade to a Model 22 to arrive at the end of August. Tyler, who will run DOS/VSE, said he will not expand his Model 12's memory from 16M bytes when he gets the upgrade.

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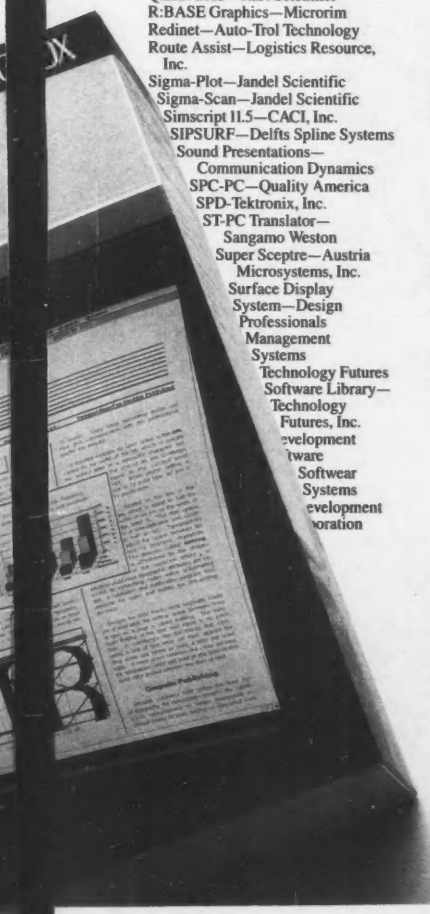

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Encapsulated PostScript files (EPSF)
GEM™ programs
GEM Draw
GEM Graph
Halo DPE
Advanced Vision Research, PC Productivity
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Macintosh PICT files (e.g., MacDraw)
Macintosh Paint files (e.g., MacPaint)
Mentor Graphics PC CAD programs
PCX Files
PC Paintbrush®
Publishers Paintbrush™
Lotus Symphony® (PIC format)
General Parametrics Video Show™ format
Autumn™—Zenographics, Inc.
*Chart™—Microsoft
*ChartMaster™—Decision Resources, Inc.
Diagram Master™—Decision Resources, Inc.
Ego™—Zenographics, Inc.
EnerGraphics™—Enertronics
FlexDraw™—TNET, Inc.
Freelance™—Lotus Development Corporation
Graphwriter™—Lotus Development Corporation
Graphic Decision Support System™—Data Business Vision, Inc.
Hot Shots™—New Vision Technologies, Inc.
Image Management System™—Electronic Cottage
Impressionist™—ExecuComp
Mirage™—Zenographics, Inc.
orgCHART™—TNET, Inc.
PC Presents!™—Imedia Corporation
PC Slide Showmaker™—Management Graphics, Inc.
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NEW PRODUCTS

Processors

Nemonix, Inc. has announced its **NXMV-Series** memory for Data General Corp. Eclipse and MV series computers.

The memories are available in 2M-, 4M- and 8M-byte capacities and are said to be completely hardware- and software-compatible with the DG systems. The NXMV-Series memory has 32-bit words and 7 bits for error-correction control. Pretested 150-nsec, 256K-byte dynamic random-access memories are incorporated in the board design.

Included in the memory is Nemonix's memory diagnostic.

The NXMV-Series is priced from $11,500.

Nemonix, 106 South St., Hopkinton, Mass. 01748. 617-435-9087.

Graphics systems

A high-resolution desktop digital image setter has been announced by **Itek Graphix Corp.**

The **IGX 7000 LED** is said to use LED technology to output both text and graphics. It features a modular raster image processor design, output of 1,600 dot/in. and an output speed of up to 500 line/min.

According to the vendor, the image setter is capable of outputting conventional paper and film material as well as press-ready direct-to-plate masters.

The IGX 7000 supports the Itek Graphix Personal Typesetting Workstation personal computer-based composition system. It is compatible with Xerox Corp.'s Ventura Publisher software and supports output to the vendor's IGX 400 laser printer.

The IGX 7000 costs $32,995.

Itek Graphix, 34 Cellu Drive, Nashua, N.H. 03063. 603-889-1400.

Printers/Plotters

Wavetek Corp. has introduced the **Model 54** 42-col. thermal printer for use with its 50-Series Data Logging Measurement System.

The printer is said to print at 5.8 line/sec. It contains a 7.17K-byte first-in/first-out buffer and can print in text or list mode. Text mode prints each line below the previous one, and list mode prints each line above the previous one.

Other features include graphics capabilities like bar-chart generation, four print fonts and automatic shuttling.

The Model 54 printer costs $1,195.

Wavetek, P.O. Box 85265, San Diego, Calif. 92138. 619-279-2200.

The Information Systems Division of **Toshiba America, Inc.** has introduced a 24-pin dot matrix printer called the **P351SX.**

The printer offers a 360 by 360 dot/in. graphics capability and a 360 char./sec. draft print speed. Letter-quality print speed is 120 char./sec.

Paper-handling features include support for up to six-part forms and automatic envelope printing with an optional envelope sheet-feeder. Dual bidirectional tractors are built in, and built-in buffer capacity is 32K bytes.

The P351SX costs $1,499.

Toshiba America, 9740 Irvine Blvd., Irvine, Calif. 92718. 714-380-3000.

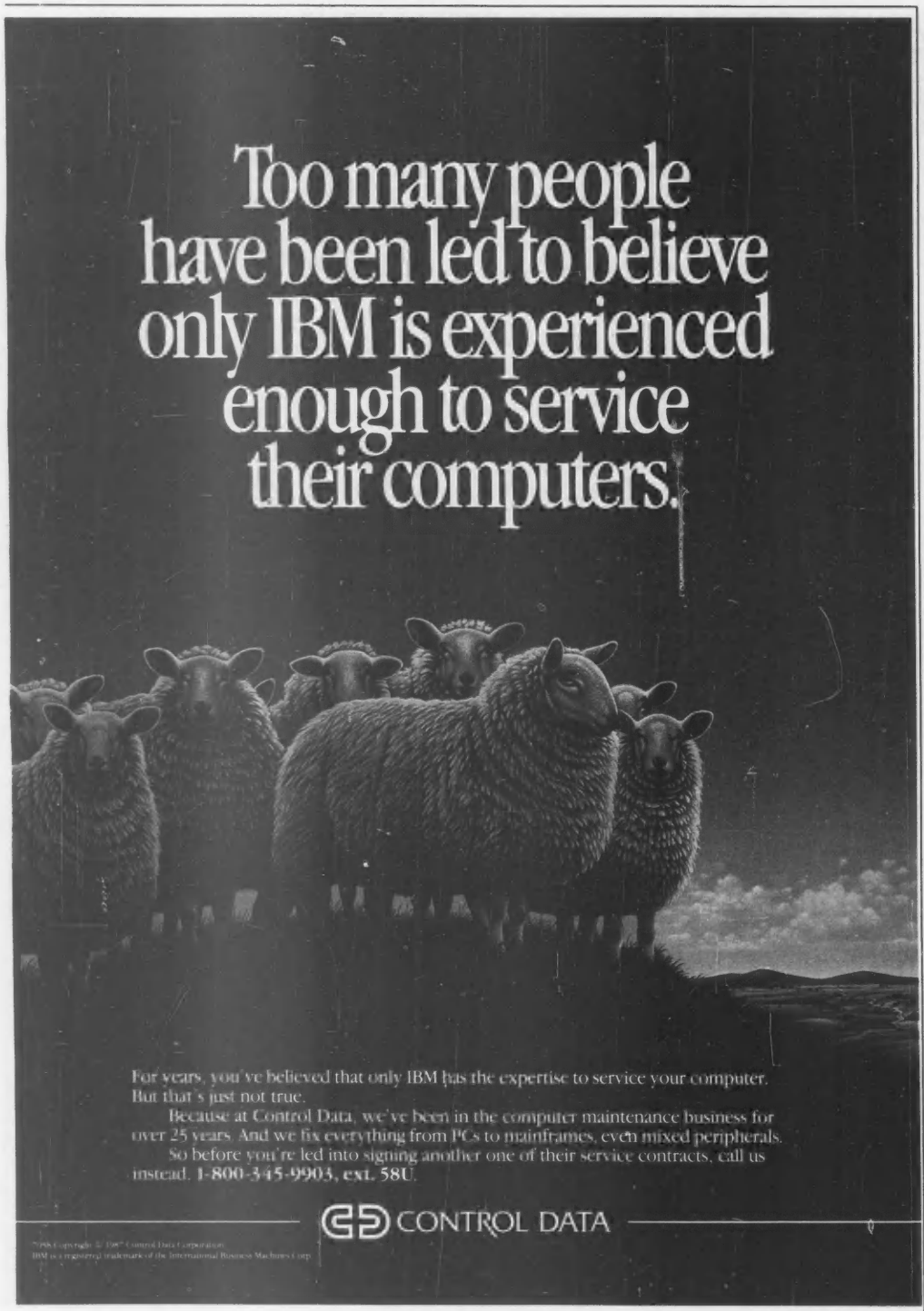
Input devices

A document scanner capable of scanning 64-in. by roll-length documents has been announced by **Ana Tech Corp.**

The **Eagle 6050** allows conversion of line art drawings, including large-format lofting drawings, into computer-aided design or industry-standard raster formats. Features include a patented single drive and a continuous-feed roller that accepts paper, mylar, vellum or film. It can scan at a speed of 5.7 in./min at an actual resolution of 500 line/in.

The Eagle 6050's price starts at $90,000.

Ana Tech, 10499 Bradford Road, Littleton, Colo. 80127. 303-973-6722.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CONTROL DATA

Getting to the core of the new Apple

BY GLENN RIFKIN

The new Apple Computer, Inc. ads appeared in *Computerworld* and other trade publications last November. The headline, "MIS manager buys Macintosh, keeps job," bespeaks the corporate vision that is now driving Apple. And it is not simply that Apple is serious about MIS: MIS is now serious about Apple.

Buoyed at last by the performance respectability of the Macintosh Plus and Macintosh II, increasing functionality in networking and communications and the announcement two weeks ago of a development alliance with Digital Equipment Corp., Apple is finished with sneaking into corporate America through the service and delivery entrance.

Desktop publishing, acting as the Trojan horse, got Apple into hostile territory, and now the company owns 10% of the corporate personal computer market. Apple management says owning 20% by 1990 is a realistic goal.

There is, of course, plenty of room for skepticism. Those with a good long-term memory will remember how the $10,000 Apple Lisa was going to win over big business. And in November 1984, a *Business Week* cover featured a chummy, laughing John Sculley and Steve Jobs clad in flannel shirts and jeans. The dynamic duo were revealing their "bold plan to take on IBM in the office."

Unfortunately for Apple, the plan was premature and based on flimsy business premises. Apple not only did not have the hardware that an MIS manager could take seriously, but it also lacked the internal mind-set to attack that market.

Rick Young, senior industry analyst with Dataquest, Inc. in San Jose, Calif., remembers those days when he worked in systems at The Boeing Co. in Seattle. "Apple would come in with the Macintosh and say, 'Isn't this wonderful? How can anyone not like this?' And when they left, they'd get bashed by the people in MIS," he says.

BILL MAYER

INSIDE

Biting off sales into MIS
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Apple gets corporate
Page 49

Jobs leaves; tide turns

Jobs' celebrated departure from Apple in 1985 did more than provide good copy for Sculley's tell-all memoirs. It allowed Sculley to get down to the business at hand, which in this case was business. Big business.

According to Apple watchers, Sculley went out on a limb, backing off from the consumer market to continue the quest for corporate business in the face of what seemed like insurmountable odds. The toughest job of all, perhaps, was reshaping the company — changing the perception of Apple as a Land of Techno-Oz to that of a serious, big-time computer supplier for business.

Unquestionably, Sculley has steered Apple onto the right track in a remarkably short time. Just last month the company announced record sales and profit for the second quarter in a row — its revenue increased 57% to $1.04 billion, compared with $662.3 million a year ago.

Turning around the fortunes of a corporation the size of Apple in two years is more than just noteworthy; it is the stuff of which business legends are made. And Sculley, who in the past 12 months has been on the cover of virtually every U.S magazine except *Field & Stream*, is more than enjoying his celebrity status.

But Apple must keep things in perspective. "They haven't won anything yet," says Esther Dyson, editor and publisher of the "Release 1.0" newsletter. "They've just managed to stay in the game."

"They've gotten a certain percentage of the way along, but they're still missing a few key elements in selling to MIS," adds Amy Wohl, a consultant in Bala Cynwyd, Pa.

However, Apple recently filled in one of those holes by allying with IBM's strongest competitor, DEC. Driven by user demand for software links, the two companies' recent agreement formalizes what had been an unofficial alliance.

Since then, Sculley and DEC President Ken Olsen — an unlikely pair of chief executive officers — have shared podiums from coast to coast. Olsen attended the announcement of the agreement at Macworld Expo in San Francisco on a Friday. Then Sculley appeared with Olsen at a DEC briefing in Boston the following Tuesday.

Although few details are currently available, the joint development will involve software links between the Macintosh and DEC's VAX — links that users have recently been asking for and forging themselves in some cases.

The two firms also plan to address products for distributed

Rifkin is a senior editor at *Computerworld*.

Core

FROM PREVIOUS PAGE

applications methodology, network management, networking, file sharing, document interchange, data base and terminal emulation.

It is clear that the alliance will benefit Apple much more than DEC. More VAX users are likely to see the reason to now buy Macintoshes than current Apple users will see the benefit of buying the more expensive VAX.

The deal with DEC reflects

Apple's Sculley

something fundamental: Apple is growing up. The company that prided itself on being offbeat is now searching for the best road into the business mainstream without completely losing its penchant for innovation and creativity.

Apple warms up to MIS

For Apple, the warming of relations with MIS marks a significant upturn in its quest. The once oil-and-water relationship is now actually blending a bit. But there's a long way to go before widespread acceptance settles in.

Apple knows that companies with a decidedly Blue cast will probably never consider Apple as an alternative. But some companies that are consistently on the leading edge of technology, such as Boeing and Hughes Aircraft Co., look more favorably upon Apple.

Those companies that are on the fence — firms at which the DECs of the world are welcome — are the ones Apple now has a chance to win over. And even in firms that accept Macintoshes for desktop publishing or other specialized applications, there is still reluctance in MIS to put Apple on its preferred vendor list.

Before Apple can succeed with MIS, it must understand the MIS mind-set. That is not a simple task for a company that has had no historical link to that market. And Sculley has clearly recognized that deficiency. Apple is bringing in scores of strategic hires with backgrounds heretofore foreign to its environs.

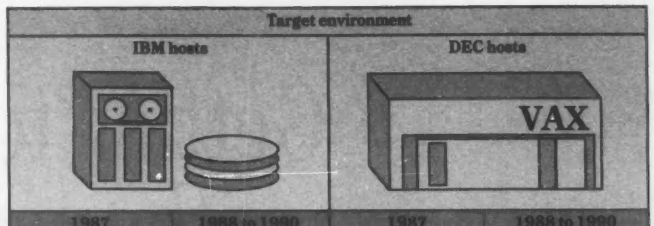
The new curricula vitae are dotted with names like IBM, DEC, Data General Corp., Honeywell-Bull, Inc., Wang Laboratories, Inc. and Ungermann-Bass, Inc. (see story page 49).

Folk lure

And the new employees are not being stuffed into sales slots, either, despite the fact that Apple has doubled the size of its field force in the last year. Virtually every part of the company, with the possible exception of research and development, is feeling the influence, from marketing to communications to internal MIS.

The desktop communications strategy

Apple will integrate Appletalk gateways for both IBM and DEC hosts by 1990



	1987	1988 to 1990	1987	1988 to 1990
Key protocols	SNA*/3270	SNA/LU6.2	Appletalk Decnet	Appletalk ISO
Apple solutions	• Appletalk gateways • Netway 1000A • Coaxial direct connects • Digital Communications Associates and Avatar Technologies cards for Macintosh SE, Macintosh II • Appleline	• IBM Token-Ring direct connects • Appletalk gateways • Coaxial direct connects	• Appletalk for VMS • Appletalk bridges • Ethernet direct connects • Decnet	• Appletalk for VMS • Appletalk bridges • Ethernet direct connects • ISO • Appletalk gateways • Ethernet direct connects

* IBM Systems Network Architecture

INFORMATION PROVIDED BY APPLE COMPUTER, INC.
CW CHART

Apple vigorously pursued its own new MIS chief, Allan Loren, luring him away from Cigna Corp. in Philadelphia. The intent was not only to solve Apple's own burgeoning MIS needs but to keep the company honest in understanding the MIS discipline, suggests George Everhart, Apple's director of business marketing.

Apple watchers say there are constant wars between the sales, marketing and engineering departments in this new environment and that Sculley has his hands full managing the chaos. "Apple is a normal company with its share of conflicts," Dyson says. Its upper managers "are not all lined up facing in the same direction."

The company also set up a business advisory committee made up of 14 representatives from Apple's largest customers, such as Du Pont Co., Hughes and Control Data Corp. These senior MIS executives advise Apple on business trends.

The influx of large-systems executives has apparently not caused the internal disruptions that might be anticipated. There have been no mass defections. Even when Jobs left to form Next, Inc., he took only 10 people with him.

Those who feared that his leaving would rob Apple of its vision have been surprised at Sculley's ability to integrate that vision into his own. And Jobs clearly was an obstacle to the company's getting to where it needed to be.

"He didn't have the discipline it takes to design hard disks and open architectures and, more importantly, the discipline needed to listen to the customer,"

The challenge: Selling to MIS

In the past, Apple Computer, Inc. simply did not face up to the issue of direct sales and support for MIS. Conversely, IBM flourished by it.

According to Rick Young, senior industry analyst at Dataquest, Inc., IBM sees the importance of the up-front marketing that direct support provides. "They establish the value before the sale. Sales are a follow-on," Young says.

Digital Equipment Corp. followed suit. "For DEC to compete with IBM, it had to field a sales and support organization like IBM's. Apple has never taken on anything like that," consultant Amy Wohl says.

"If you want to be considered a first-class vendor to corporate data processing, you need to be a systems vendor," Wohl continues. "Apple hopes its retail channel will step up to that level, but that is not enough for an MIS department that is used to 20 years of IBM."

For Apple, that challenge is tempered by the reality of its traditional distribution channel: the retail dealers. Apple simply cannot destroy what has been its lifeblood, so it must walk a fine line between creating a direct sales and support force for large MIS accounts and not alienating the reselling folks.

Striking the balance

According to Chuck Berger, Apple's vice-president of market development, the company is hard at work finding that balance.

Berger insists that direct sales, while now being handled by experienced systems sales representatives, remains a small part of the business. Apple says it hopes to get its greatest penetration into MIS through its value-added resellers (VAR) like Nynex Corp., Businessland, Inc. and Microage Computer Stores and regional outlets.

"We've been working with [resellers] for two years now and will continue to upgrade their capabilities to call on these large corporate accounts," Berger says.

To that end, Apple initiated its Account Managers Program. The program puts trained direct sales agents in the field to help dealers create the demand. But those agents do not take direct orders; they funnel everything through a dealer.

The program is not to be confused with Apple's National Account Program, which bypasses the dealer. Companies involved in this program — about 100 large accounts, according to George Everhart, Apple's director of business marketing — simply would not buy Apple if they had to go through a dealer. To accommodate these companies, Apple provides direct service and support for them. This program, in place for three years, is not visibly pushed by Apple.

The umbrella for both programs is the team-selling concept, introduced last October at Apple's annual sales meeting. This approach allows sales representatives to receive credit and compensation for a sale regardless of whether it is direct or through a dealer.

Selling against the VARs?

These moves are part of an attempt to avoid the confusing message customers had been getting from Apple, Berger points out. Often, a sales representative would be in the trenches selling against a reseller, and everybody would end up angry and unsatisfied, particularly the customer.

Apple says the new approach will only help, not hinder, dealers. "The dealers think it's great," Berger says. "We're putting dozens of people out in the field who are going to generate demand that [the dealers] will benefit from."

Whether MIS will benefit is another question. Apple is well aware that large corporations insist on direct contact with the company for more reasons then sales and service. Fortune 500 accounts want to know strategies and product directions and often want hands-on access to prototype machines in order to set their own direction.

In addition, Wohl points out, new programs are fine at the workstation level, but they do not address the complex, large-systems level. "How many Businesslands know how to write or implement code on a mainframe?" she asks.

GLENN RIFKIN

Apple's new faces

The new faces at Apple Computer, Inc. come not from a hacker's garage or even other personal computer makers but from large corporate environments that heretofore were not feeding grounds for the Cupertino, Calif., company. The following is a sampling of the executives who have recently joined John Sculley's crusade at Apple:

Charles Boesenberg, 38, senior vice-president and group executive for U.S. sales and marketing.

Boesenberg went to Apple after leaving Data General Corp., where he was vice-president and general manager of operations for Europe, the Middle East and Africa.

Prior to working at DG, Boesenberg spent 10 years with IBM in various sales and marketing management positions, including the National Marketing Division.

Boesenberg is responsible for developing and implementing sales and marketing strategies for all Apple products. He joined the company in January 1987.

Harry Copperman, 40, vice-president and general manager of Apple's Eastern Operations Group.

Copperman joined Apple after 20 years of sales and marketing at IBM. He was most recently IBM's director of marketing for higher education.

Copperman currently heads one of Apple's three geographic sales regions. Each group is individually responsible for all aspects of sales, support, training and management in its region. Copperman joined Apple in September 1987.

Allan Loren, 49, vice-president of information systems and technology.

Loren spent 16 years at Cigna Corp., one of the world's largest insurance companies, before joining Apple last September.

He is responsible for all information systems management at Apple and also interacts with the company's sales and marketing staffs for product development.

Joseph Schoendorf, 43, vice-president of marketing. Schoendorf joined Apple in November 1987 after leaving Ungermann-Bass, Inc., a supplier of local-area networks based in Santa Clara, Calif.

Prior to working at Ungermann-Bass, Schoendorf spent 18 years with Hewlett-Packard Co. in various sales and marketing management positions.

Schoendorf is responsible for Apple's strategic marketing group.

Kevin Sullivan, 45, vice-president of human resources.

Sullivan came to Apple after leaving Digital Equipment Corp., where he spent 13 years in a variety of senior personnel management positions.

He joined Apple in April 1987 and is currently responsible for all of Apple's human resources functions worldwide.

GLENN RIFKIN

says Kirk Loevner, Apple's manager of U.S. product marketing. "People here still think we can change the world, but we're more mature about how you do it."

No fooling around

But while Loevner and Apple's marketing staff go after new applications — such as training and scientific/engineering applications — as well as new vertical markets like the financial sector, the key issue may well come back to Apple's culture change. Innovation, after all, has been the company's watchword, and without it, Apple offers less than a clone company does.

And Apple has indeed changed, from counterculture to corporate culture. The T-shirts and beer blasts may continue, but the motivation at the company is now the same as at Ford Motor Co. and IBM: to increase profits and grow.

"There are a lot more MBAs running around Apple," Wohl says. "Of course, I'm not sure how good that is."

Still, people like Everhart and Charles Boesenberg, senior vice-president and group executive for U.S. sales and marketing, point out that they left their large-systems environments not to come in as evangelists but as pilgrims.

"The people who came here with big-business backgrounds didn't come to try to show Apple, 'OK, you dummies, this is how it's done,' " Everhart points out. "I came here because I saw the chance to truly partake in the formation of what Sculley calls a third-wave company — to do things differently than DEC or IBM did them."

And Sculley is intent on not letting up on that. While R&D is funded to the tune of $250 million, freethinkers like Bill Atkinson, developer of Hypercard, and Alan Kay, designer of the Smalltalk programming language, are still encouraged to sit on mountaintops, gaze at the stars and come up with third-wave ideas.

Some longtime employees, like Vice-President of Market Development Chuck Berger, who has been at Apple for six years, admit that the company has changed. The freethinking, he says, is now directed toward what Apple is trying to accomplish as a company rather than being totally random.

"There's definitely not as much time to sit around and brainstorm ideas as there used to be," he says. "But the structure that we've added around here actually frees up a lot more bandwidth to think of creative products and marketing."

Apple's way

Around Silicon Valley, the word is that, though Apple is changing, R&D is still the wild and crazy place it always was, and as long as that stays intact, the ties to the past are secure.

"People have been saying that Apple is changing since Sculley walked in the door 3½ years ago," says Guy Kawasaki, a former Apple software developer and current president of Acius, Inc., a software company in Cupertino, Calif. "I don't think it's changed that much."

Kawasaki reports that Steve Capps, a member of the original Macintosh development team, recently rejoined the R&D group after a two-year absence. "A guy like him would never have gone back there if it was just blue suits. It may not be like it was, but it's still the funnest place in the valley."

Fun notwithstanding, the mixing of two cultures has had an impact. The bureaucracy continues to grow: No matter how open-minded the environment, there is a limit to how many engineers can walk directly into Sculley's office to pitch their ideas.

But as the cultural crossover continues, the new employees — at least the ones hoping to survive and thrive — are acutely aware of the need to preserve the Apple way.

"When I think about reorganizing or restructuring something, I stop and say, 'Will that screw up the Apple way? Will that keep [up] the entrepreneurial way things are going?' " Everhart says.

"You take a 3-year-old running around the room filled with fire and enthusiasm, and he may come up and stick his tongue out at you and it's cute. If a 15-year-old comes up and sticks his tongue out at you, this child may have some problems. You've got to change your behavior patterns.

"But what you would hope you see in the 15-year-old kid is the same fire in his eyes as the 3-year-old has," Everhart continues, "even though he's learned not to stick his tongue out at people."

Apple is clearly not sticking its tongue out at the world of big systems anymore. Words like connectivity, SNA and networking used to be taboo at the company, but no longer. A potential customer now hears language from Apple that is reminiscent of companies like DEC, IBM and Wang.

And somehow, Apple hopes to retain its focus on the individual user while embracing the network. The game plan is to see the world from the PC out rather than from the mainframe in.

Apple says it can accomplish its goal by continuing to improve

Continued on page 51

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Information Systems and Technology

System 38 Applications Programmers

You will design programs, database, and code programs run on the System 38 and written in RPG III. You'll need a BA/BS and 1-3 years of RPG III experience. A background in fourth generation language is a must. Reply to Dept. KA-CW1.

Macintosh™ Programmers

You'll help develop a state-of-the-art network-based information system that will impact the way business does business. You'll need 5-10 years in software engineering with in-depth, recent experience on the Macintosh. Extensive development background in C and exposure to 68000 assembly are also required. Reply to Dept. ET-CW2.

Senior Business Analysts

Working with Project Management, you will perform business analysis; identify business requirements and functional specifications; and prepare documentation, training and rollout implementation. You should have a BA/BS, at least 5 years' experience in system analysis, and excellent communication skills. Reply to Dept. ET-CW3.

Data Modeller

You will develop data models of Apple's business operations, implement corporate data models and provide consultation to our MIS Application Development Teams for local data. You must have 3-5 years' experience in producing data models with automated software tools, as well as in-depth knowledge of finance, manufacturing, sales and distribution. Reply to Dept. KA-CW4.

Network Design Engineers

You'll need a BS in EE or CS with at least 3 years of experience in designing large corporate telecommunications networks. Experience in several of the following is needed: satellite, microwave, T1 fiber optics, X.25, DecNet, SNA, voice and video. A background with PBX systems, LANs, various transmission media and integrated communications is also required. Reply to Dept. KA-CW5.

Peripheral Systems and Products

Senior Design Engineers

Floppy Disk Drive Controller

You will design floppy disk drive interface ICs for vendors making second generation drives, as well as test and evaluate next generation floppy drives. You should have an MSEE (MSCS or BSEE with strong design experience is acceptable) and 2-5 years of disk drive controller design experience. Reply to Dept. CE-CW6.

Hard Disk Drive Controller

You will work with IC designers on a new chip for a very unique and new controller. You should have an MSEE and 5 years' experience designing hard disk drive controllers. Reply to Dept. CE-CW7.

Magnetic Head/Media Specialist

You will characterize vendors' heads and media electrically and mechanically, perform simulation to make recommendations to vendors and qualify floppy disk media. You should have a BS or higher in electrical engineering or physics and 8-10 years' experience in designing magnetic recording heads for hard disk drives. Reply to Dept. CE-CW8.

Floppy Disk/Tape Back-Up Engineer

You will be responsible for project management of tape drive products from product conception through completion. You should have 5-10 years' electronic design experience and a BSEE; MSEE preferred. You must have experience in magnetic recording, digital tape drives or equivalent, plus knowledge of drive I/F (e.g. ST506, SCSI), data encoding and drive controllers. Reply to Dept. CE-CW9.

Peripheral Project Manager

You will take products from the investigation phase through production start-up. You must have a BS in a technical discipline (an MS or MBA is a plus), 2+ years' design experience in peripheral product development, 3-5 years' experience in managing product development across functional areas, and you should understand Apple products and the development process. Reply to Dept. CE-CW10.

Product Design

Product Design Engineers

You'll be involved in product design at every stage of development, from concept to finished assembly. You should have 4 years in mechanical development of electronic products. Consumer products experience is valuable. A BS in Industrial Design is acceptable; a BSME is preferred. Reply to Dept. CE-CW11.

Software Development

Datacom Software Engineers

You'll need experience with one or more of the following: 3x74 emulation, 3270 datastream, VT220/240 emulation, SDLC, DISOSS. Reply to Dept. BH-CW12.

Networking Software Engineers

You must have Macintosh programming experience, low-level system software and networking skills, plus knowledge of drivers and protocol implementations. Reply to Dept. BH-CW13.

UNIX* Software Engineers

You must have experience in UNIX kernel development, device drivers, utilities, NFS, and communications. Reply to Dept. BH-CW14.

Printing Software Engineers

You'll need knowledge of text editors, printer/plotter drivers, page description languages, desktop publishing or business forms software design; Macintosh programming experience very helpful. Reply to Dept. BH-CW15.

Macintosh to Mainframe Software Engineers

You'll need experience with Macintosh programming, 3270 communication software links and have knowledge of IBM, SNA, and LAN network protocols. Reply to Dept. BH-CW16.

Operating Systems Software Engineers

You'll do file systems development for Macintosh OS. You must have experience with multi-tasking O/S development, device drivers, 68000 assembly, C, or Pascal. Reply to Dept. BH-CW17.

VMS Systems Software Engineers

You'll need a strong background in systems-level design in VMS and its component subsystems (such as memory management, pageswapping, and I/O). Reply to Dept. BH-CW18.

Development Environment Software Engineers

You'll be involved in the design of a multi-language, integrated development environment for the Macintosh. Reply to Dept. BH-CW19.

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Core

FROM PAGE 49

its already superior graphical user interface and tying it into existing and future network standards.

"We've got a two-pronged strategy," says Chris Bryant, marketing manager for work-group systems and desktop communications. "We want to drive the PC market with superior technology and, at the same time, recognize that it is a multivendor world and provide connectivity to all those environments."

Off with the blinders

To that end, Apple has already announced support for the LU6.2 and Advanced Program-to-Program Communications protocol standards.

In January, the company shipped the first of its IBM-host-to-Mac networking products, including an implementation of LU6.2 and PU2.1. In addition, Apple has identified the building blocks of a network management architecture and plans to provide a consistent set of capabilities in that arena.

Apple also established a joint development relationship with Northern Telecom, Inc. to create integrated voice/data products and move toward bringing Integrated Services Digital Network to the workstation level. The coupling has already produced a Lanstar Macintosh product from Northern Telecom and support for Macintosh networking over Northern Telecom private branch exchanges.

"PEOPLE here still think we can change the world, but we're more mature about how you do it."

KIRK LOEVNER
APPLE

But most of Apple's focus is on selling Appletalk. Bryant points out that Appletalk was actually the key to the proliferation of desktop publishing because it made possible the interface between the Macintosh and the Applewriter laser printer.

The protocol, Apple says, is the wave of the future, as it uses software rather than the traditional hardware to connect work groups.

Close to the individual

Bryant admits that the word "individual" is a scary one to MIS. But he says he believes strongly that if the system does not handle the specific concerns of the individual, the individual will simply not get the job done.

Apple set up different internal work groups to create connections to specific environments, such as IBM Systems Network Architecture (SNA), Microsoft Corp. MS-DOS, VAX and the International Standards Organization's Open Systems Interconnect (OSI).

In the future, the company will introduce direct connection to token-ring, gateways on an Appletalk network to an SNA environment and a direct coaxial connection to LU6.2 (see chart page 48).

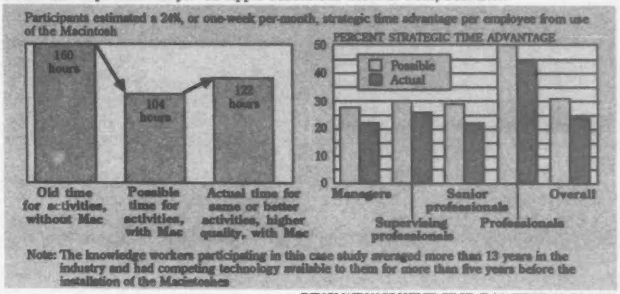
"We're enthusiastic about the Ethernet flavor they are bringing to their networking," says Dave Mueller, manager of network architecture for Boeing Computer Services in Seattle. "But we don't see [Macintoshes] replacing our PCs. They are an adjunct to them. MIS is definitely more willing to listen now."

Apple's Loevner agrees. "We had 4% of the corporate market three years ago, 10% now, and 20% is what we want. But we are realistic enough to know that four out of five desktop machines won't be Macintoshes," he says.

Apple is also getting into the venture capital business in a big way, with investments in Touch Communications, Inc., a Scotts Valley, Calif., start-up doing OSI networking software products; and Sybase, Inc., a high-performance distributed SQL-based relational data base company

Productivity gains with the Mac

Estimated improvements for 42 Apple Macintosh users at Peat, Marwick


Participants estimated a 24%, or one-week per-month, strategic time advantage per employee from use of the Macintosh
160 hours
104 hours
122 hours
Old time for activities, without Mac
Possible time for activities, with Mac
Actual time for same or better activities, higher quality, with Mac
PERCENT STRATEGIC TIME ADVANTAGE
50
40
30
20
10
0
Possible
Actual
Managers
Supervising professionals
Senior professionals
Professionals
Overall
Note: The knowledge workers participating in this case study averaged more than 13 years in the industry and had competing technology available to them for more than five years before the installation of the Macintoshes

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CW CHART

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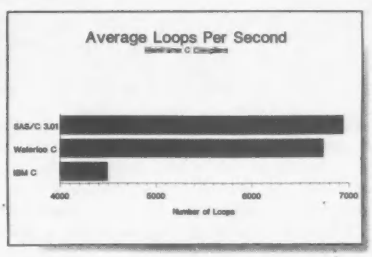

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based in Berkeley, Calif.

Apple spun off its software development group into a separate business unit called Claris Corp., which last month released the first batch of products that fall under its own logo. Consultants like Wohl say Apple will cut the umbilical cord and let Claris strike out on its own in the not-too-distant future in order to ease fears among Apple's third-party development community.

Big enough for both

Apple knows full well that it cannot wipe clean millions of desktops and refill them with Macintoshes. It is intent on hooking into both the MS-DOS and OS/2 worlds with packages such as Apple File Exchange. In fact, with that effort in mind, last month the company began shipping Appleshare PC, a software product that integrates both MS-DOS and Unix into the Mac environment.

Apple is also pointing out to MIS that in OS/2, IBM has done Apple two favors: By emulating its graphical user interface, IBM legitimizes everything Apple has been preaching during the past four years, and by opting to create a standard beyond MS-DOS, IBM has signaled to the world that there will be multiple standards on the desktop. Enter Apple.

"We've proven to MIS that it is going to be a multivendor, multi-operating-system environment. Their best move in that situation is to find the best vendor for each specific area in which they need microcomputer technology. And right now, we have a complete solution," Apple's Berger says.

But while Apple has clearly gotten the MIS religion, it has some gaping holes to fill before the converts will rush to join it. According to Wohl, Apple must decide whether it is a systems vendor.

If so, it needs to find a systems integrator, a la DEC or Wang, to help it meet that end (see story page 48).

For what Apple is seeking in big business, that type of savvy might not be necessary, although it certainly would be helpful. Apple executives say the company can grab its desired portion of the corporate desk top without becoming a mainstream systems vendor.

Michael Homer, director of business development at the company, says Apple's size and flexibility make it able to respond to customers' product needs faster than larger rivals.

"We can tell product development what a customer wants and get projects started within two months. The process is incredibly short," Homer says. And in a world where strategic advantage can disappear quickly, MIS welcomes that agility.

Apple has also benefited greatly from the grass roots movement among corporate users to marry VAXs and Macintoshes. Apple is selling vigorously into DEC accounts, and DEC and Apple sales representatives are reportedly collaborating on many sales, an activity that will likely increase significantly with the new agreement.

No time like the present

Apple knows that it takes a long time to turn perceptions around. Its biggest concern is that MIS understand the added value the Macintosh offers over the IBM Personal Computer and Personal System/2.

The drums have been beating out the message: What IBM only promises — OS/2 Extended Edition and Presentation Manager-type capabilities — Apple already has, and in superior quality. The Macintosh II already offers the processing power of the Intel Corp. 80386 chip, and, overall, the Mac II's Motorola, Inc. platform is far superior to the Intel platform in the wondrous world of graphical interface.

ONCE users try a Mac Plus or Mac II, it is difficult to wrest them away. The machines tend to multiply in an organization like rabbits.

In fact, according to Stewart Alsop, editor and publisher of "PCLetter," an industry newsletter in Redwood City, Calif., the perception is that IBM is now responding to what Apple is doing rather than vice versa.

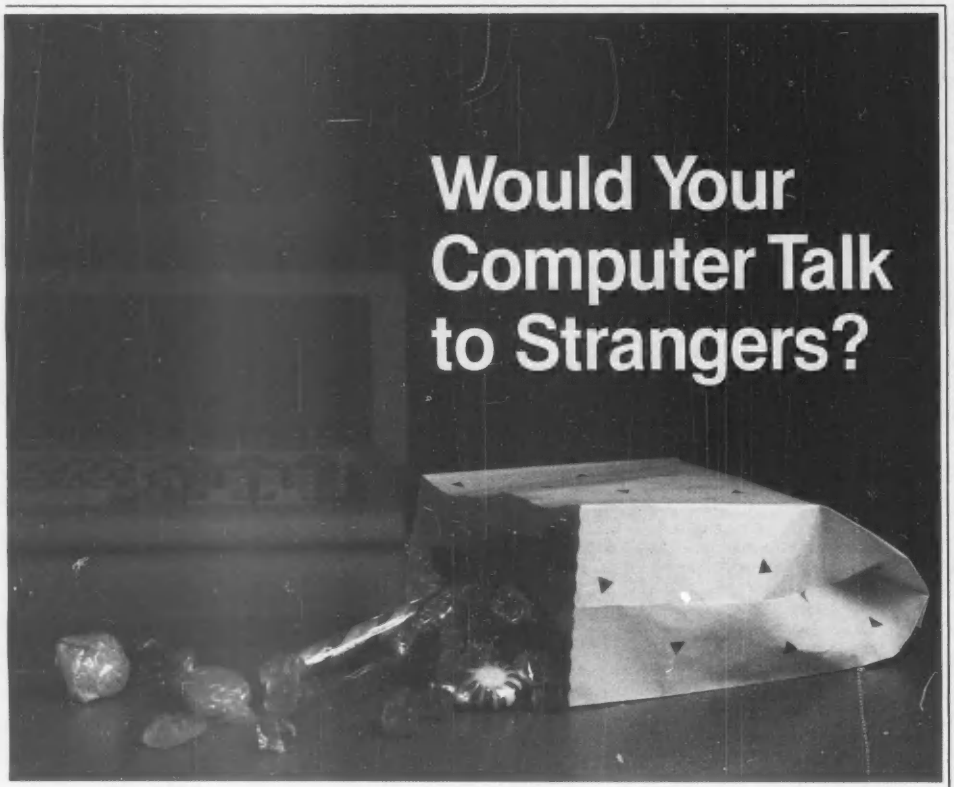
"This gives Apple a legitimacy beyond any fancy technological capabilities," Alsop says. "It gives Apple the legitimacy that Xerox had in the '60s and that DEC still has. Apple is a status symbol in the corporate setting."

But most MIS managers don't contract Mac fever, simply because they do not use the machine. And when they hear IBM is on the way with similar capabilities, regardless of whether those capabilities match up, they are willing to wait it out.

"The more the IBM PC starts to look like a Macintosh, the easier it is for the MIS guy to say, 'We don't need to look that way anymore.' " Wohl says. "The window isn't closing, but it's getting smaller."

Nonetheless, Apple's technology is seductive. Once users try a Mac Plus or Mac II, it is difficult to wrest them away. The machines tend to multiply in an organization like rabbits.

The massive software development going on for the Macintosh, along with such innovations as Hypercard and Multifinder, make Apple well accepted as a second standard. And for now, Apple is content with that. ■



Two new UDS modems, featuring call guard capability, can restrict entry into your data base. Access can be limited to authorized users on dial-up or dedicated lines, whether communications are synchronous or asynchronous. The new modems may be configured for password, password plus callback or automatic pass-through.

201CG adds system security to the long-standing reliability and economy of the 201 modem design. Supporting half-duplex, 2400 bps synchronous dial-up communications, the 201CG can serve as many as 83 users in an access-controlled environment.

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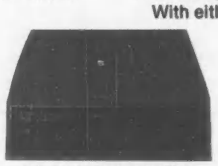
With either modem you can make software-controlled security determinations on a user-by-user basis.



Dial-up data security is available with both 201 and 224 modems.

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Productivity tools sit idle

Software turns into expensive 'shelfware' when programmers shun new development packages

BY ROGER PHILIPS

Despite management's best intentions — and more than $300,000 in license fees — a Texas-based aerospace company was unable to convince its programmers to adopt a major new productivity tool. One influential project leader took every opportunity to throw cold water on the product, swaying the entire staff. At the conclusion of the initial project, the product was quietly shelved.

Atlantic Richfield Co. in Los Angeles took a survey and found it had accumulated more than 100 software productivity products and was still paying maintenance fees for all of them. In frustration, management decreed that before any new tool could be brought in, at least two existing products had to be dropped.

How can organizations avoid the "shelfware syndrome?" After automating end-user departments for all these years, MIS's desire to automate itself is strong. But just like their end users, MIS departments need planning and discipline if automation programs are to succeed.

A large part of the job of many development centers revolves around evaluating, selecting, implementing and installing new productivity products. Yet few customers are satisfied.

James F. Sutter, vice-president and general manager of information systems at Rockwell International Corp., voices the typical frustration. "These products all sound good when you're talking to the vendor. But many times, you install them and go back a year later to find they didn't live up to expectations — or worse, they're not being used."

Philips is the founder of Philips Associates in Scottsdale, Ariz., consulting in developing, managing and marketing computer-related products. He is the former president of Transform Logic Corp., an IBM systems software vendor.

Does Mikey like it?

Just giving the staff more tools does not necessarily make its life easier. A survey of 149 managers of IBM MVS installations conducted by Dialogic Systems Corp. in San Jose, Calif., shows that the four most frequently asked questions when evaluating productivity tools are the following:

- Does the solution specifically address the work load problems I need help with?
- Do the gains in accuracy and speed justify the cost of the purchase?
- Are the reliability, availability and service levels consistent with my expectations?
- Most important, am I convinced my programmers will use the tool after purchase?

Several additional questions, including the following, did not make the Top 10 but should have:

- Is relieving a productivity bottleneck in one phase of the development cycle merely going to move it somewhere else?
- Can the product address more than one phase of the software life cycle? For example, with maintenance absorbing the majority of resources in most organizations, products such as Viasoft, Inc.'s Via/Insight, which supports both maintenance and development, might hold special appeal.

Once these questions have been satisfactorily answered, the usual preacquisition diligence must be observed. When checking references, be aware that products in the computer-aided software engineering (CASE) arena tend to be complex. Only after using a CASE product for six months or more can an organization really begin to know whether the product will work satisfactorily in its environment.

Ask the vendor for contact people from its most- and least-satisfied customers. But don't stop there. Dig out at least two references on your own, without the vendor's help. Do not proceed unless you get glowing reports from at least a majority of experienced users.

Also, consider the fact that you will be married to the vendor for a long time: Investigate accordingly. Review the company's financial history and outlook, but also take time to research its plans for the future of the product line.

You do not need to limit yourself to buying from the financially strongest: In this industry, the best innovations often seem to come from start-ups.

Finally, scrutinize the documentation with an ulterior motive. An organization that strains for perfection in its documentation is likely to do the same in its software. Find out, as an added bonus, if the documentation is available in machine-readable form. Many analysts and programmers like to be able to search and review product documentation on-line using the same editor they use for software development.

Although CASE products are targeted at many phases of the software life cycle, the preponderance of tools are aimed at development and maintenance programming. Yet there seems to

TED PITTS

- **Programmers' first impressions last**
- **Beware the moving bottleneck**
- **Five special buying considerations**

be a natural resistance among programmers to learn and use these tools.

In interviewing nearly two dozen large companies and government organizations about programmer productivity tools recently, I discovered one outstanding factor: The success of a tool was tied directly to the programmer's first impression of it. If programmers liked it initially, it got used; if not, it quickly became shelfware. And in most organizations, most tools did not pass the programmer popularity test.

What are the reasons for this unhappy occurrence? Are programmers just perverse individualists who don't want any part of the future? Hardly.

No time for technology

Consider the working environment of the typical programmer. His attitude is natural fallout from the way we define his job. He works under tight deadlines on one or more complex tasks, all of which impact the rest of the organization in some way. Most programmers are acutely aware of two imperatives: If they don't finish their part of the job on time or if the program they are working on blows up in production, bad things will happen. This makes for a conservative, get-out-of-my-way-and-let-me-do-the-job approach.

This same programmer is probably already making good use of important productivity tools: an on-line editor, perhaps a test data generator and maybe a batch simulator for testing on-line systems.

The question is, How many different complex tools can an individual reasonably be expected to master at any given time? While each new tool promises benefits, each has its learning curve and requires continued training time to stay current as it evolves with technology. Clearly, there is a theoretical limit to the number of products one person can know and still get work done.

Those who can, teach

There are two answers to this dilemma. The weaker but more practical one is to develop tool specialists who can tutor, coach and generally hand-hold a programmer or analyst through the occasional use of a particular tool. However, this approach has its limits. Tying up two professionals on a task that requires only one quickly defeats any productivity gains the tool has to offer.

A better answer lies in the software products themselves. We might wish that just one vendor could provide all the best tools. But in many environments, you need to choose tools from different vendors to find the best one in each category. Thus, the programmer or analyst must put up with a variety of nonstandardized interfaces and programming conventions as he moves from tool to tool. Furthermore, when the work produced by one tool could naturally feed the next, programmers still have to do manual input.

The single-vendor solution is not likely to happen soon, although system software companies such as Computer Associates International, Inc., Sage Software, Inc. and Viasoft are beginning to integrate a suite of tools for easier use.

Another approach is a developer's workbench. Using a software shell, all available CASE tools are presented to the analyst or programmer in a uniform and natural way. Designed right, the workbench greatly reduces the learning curve for new tools.

While appealing theoretically, this idea has proven difficult in practice. Rex Widmer of TWA, who is also chairman of IBM's Guide Cobol Committee, predicts that no mainframe programmer's workbench will be a commercial success. "The JCL generation feature, which is the heart of these systems, is too unique" to be standardized into a commercial product, he says.

THE SUCCESS of a tool is tied directly to the programmer's first impression of it. In the majority of organizations, most tools do not pass this test.

Many programmers have developed their own workbenches, but these homegrown efforts have, for the most part, failed to meet the objectives listed above.

Perhaps the ultimate answer lies in a yet-to-be-developed technology, a "developer's expert." Theoretically, this product would analyze each step of the development or maintenance process as the programmer goes along. The expert would then prompt the programmer or be prepared to respond to inquiries at any point with suggestions on which tool to use next and how to use it.

The technology to develop such a system is just becoming available now, with products such as Aion Corp.'s mainframe expert system shell.

These latter solutions are not available yet, but watch for them. In the meantime, what can you do to garner staff acceptance and successfully install and use productivity products?

When Minneapolis-based IDS Financial Services, Inc. installed CGI Systems, Inc.'s Pacbase application generator, the company found programmer resistance so strong that management brought in a select group of contract employees whose one and only job was to use the product and make it work. This approach proved successful, but IDS later spent considerable time training the regular staff in using Pacbase.

Another organization chartered its

own public relations group to sell a new tool to its programmers. These are extreme tactics, but they contain the seeds of insight.

Choose your psyche

There are other, more practical ways for managers to set staff expectations prior to product introduction. Daniel Couger, consultant and professor at the University of Colorado at Colorado Springs, tells of managers from two different companies who introduced the same code generator product to their staffs. Both organizations had a large application development backlog. The first manager took this tack:

"Each of you should be able to produce more code in less time with this tool. However, I don't expect more lines of code output from you. I expect you'll spend more time in up-front analysis and will produce better quality systems that will require less maintenance. That way, we can catch up on the backlog."

The second manager issued the following edict: "In order to attack the backlog, you are each now expected to develop 10% more code per month using this new tool."

As you might expect, manager No. 1 enjoyed success; No. 2 did not.

Here we see how a productivity product should and should not be introduced. Planning is important, but attitude is key. When a product is introduced, each programmer or analyst naturally asks himself, "How will this product affect my job, and do I want to see it succeed?"

When it came time to introduce Transform Logic Corp.'s Transform application generator to his company, Darryl Waite, vice-president of information systems at Phoenix-based Ramada, Inc., borrowed a page from Mark Twain's *The Adventures of Tom Sawyer*.

He let it be known that only the best programmers would be *allowed* to use the product. Soon, a line formed outside his door of people who hoped to be approved as one of the first users of this exciting new technology. The introduction, as you might expect, was a success.

The payoff

Other planning considerations are needed to avoid unpleasant surprises, set a positive attitude and help ensure a payoff in the software investment:

Budgeting. The initial license price of the software typically represents only one-third to one-half the total cost of implementation. Budget accordingly.

Contract negotiations. Surprisingly, many of the vendors' and customers' expectations — both financial and nonfinancial — never find their way into the contract. Contract negotiation is the best time for your needs to be clearly understood by both parties and committed into writing.

Acceptance. To trial or not to trial? Most productivity software is bought on a trial basis. In many instances, this is a mistake. It sends a message to the staff that management is not really committed to this product, which often dooms it to failure. Most CASE tools will not show their true worth until after many months of use, anyway — longer than most vendors would agree to a trial. If you do your reference checking and preacquisition homework, you can take the attitude, "This is the product we selected. We are committed to it, and we will make it work for us."

Training. Product training grows stale quickly. Only the staff using the product initially should be trained by the vendor at the time of installation. Training at the vendor's location eliminates distractions and helps build enthusiasm for the product. You can lay out a training schedule for the rest of the staff at the appropriate time.

Support. If necessary, establish a special support team or equip the development center to give assistance during the learning curve. Many firms fail to make full use of the vendor, who is often standing in the wings trying to figure out how to turn your organization into a prime reference account. Don't be afraid to call heavily on him as needed.

First use. A controlled first use of the product allows quirks to surface and any adjustments to be made. Ideally, this first use should be in a modestly sized, noncritical application. Don't use the term "pilot project," as this implies that the organization is not yet committed to the product. If that is the message, it is all too easy for a few pessimists to find ways to make the product fail. Furthermore, this is not the time for benchmarks; the learning curve would skew the data.

Evaluation. Do benchmarks under controlled circumstances, when the learning curve is complete — six to 12 months after installation.

Organizations that follow these steps have been consistently able to avoid the shelfware syndrome. Shelfware is not only a waste of money, it is also evidence of a lack of leadership and planning.

With proper evaluation, a sound plan, reasonable expectations and unequivocal management commitment, organizations can count on benefiting from their investments in software development and maintenance productivity through automation. ●

WHEN a product is introduced, each programmer or analyst naturally asks himself, 'How will this product affect my job, and do I want to see it succeed?'

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McDonald's will use ISDN to send voice, data and video over ordinary telephone lines simultaneously. An AT&T 5ESS™ switch at Illinois Bell will support digital phones, integrated voice/data terminals, facsimile, voice mail, host access and modem pooling, giving McDonald's a real competitive advantage in its data networking capabilities.

"In business language, this means we're going to do an even better job for the 30 million customers that we serve every day," said Bonnie Kos, McDonald's Vice President of Facilities and Systems.

"ISDN provides an information outlet to every workstation, thereby eliminating time-consuming and costly wiring, as well as enhancing messaging and network control capability."

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TAKING CHARGE

David A. Ludlum

An obstacle course for MIS

There are no big surprises in the ranking of critical MIS issues by information systems executives surveyed recently by the Index Group, located in Cambridge, Mass. Strategic concerns commonly discussed in the press and professional associations top the list. But responses to some questions about the issues provide some interesting insights into why they dominate the thoughts of senior MIS executives.

Index distributed the survey to readers of its newsletter and, the firm says, received more than 500 responses, slightly more than half of them from the highest ranking information systems manager at the respondent's organization.

The four top-rated issues are common strategic concerns of MIS executives: aligning MIS and corporate goals, MIS strategic planning, educating senior management on the potential of information systems and using systems for competitive advantage.

The next three issues deal with broad technical challenges: developing an information architecture, integrating systems and data utilization. The final three of the Top 10 are general management concerns facing systems executives: human resources, managing organizational changes caused by systems and funding the MIS organization.

Lack understanding

Although aligning MIS and corporate goals seems like a natural choice for MIS managers' No. 1 concern, it might not appear to be a particularly difficult challenge. But just more than one-third of those responding suggested otherwise when they disagreed with the statement that MIS professionals understand the business environment well, and they were accompanied by another third of the respondents who took a noncommittal stand on the question.

MIS strategic planning is similarly obvious as a critical is-

Continued on page 60

Hendry shakes up MIS

Coke exec wants staff to catch the wave of change

BY CHARLES BABCOCK
CW STAFF

ATLANTA — At The Coca-Cola Co., William H. Hendry is described as someone with a laissez-faire management style, someone who does not impose his views on subordinates, someone who is even indifferent in the view of critics with a different set of priorities.

At the same time, he is identified with the wave of change that has swept through the company, a wave that included the introduction of "New Coke" and an attitude that it was time to make things happen.

"If I were running a big company, I'd want him working for me, because he's very results-oriented. He doesn't get bogged down in analysis paralysis," says George R. Martin of George Martin Associates, Inc., a 16-person contract programming firm that works for Coca-Cola.

Hendry, 47, manager of corporate systems at Coca-Cola's headquarters here, attacked the gap between central data processing and users by moving eight members of his corporate information services staff from their department's sixth floor home into offices next to accountants and financial analysts.

No backlog

Under Hendry and a top corporate steering committee, the applications backlog has shrunk to a manageable list that is scheduled for development during a 12-month period. The schedule is adhered to so rigorously that Hendry says, "We don't have an applications backlog."

PROFILE
William H. Hendry

ROGER GRIGG

Position: *Manager of corporate systems, The Coca-Cola Co.*
Mission: *Leveraging the staff, off-loading staff work to users and assigning staff members to work alongside users.*

At the same time, Hendry has overseen a 25% reduction in his staff. Not bad for someone with a reputation of a laissez-faire approach.

"Bill leaves each of his people alone," says Carol C. Austin, who describes herself and Hendry's three other group managers as very different types of people.

"I try to maintain a very enthusiastic, laid-back style," Hendry says with a quick, disarming smile that papers over that paradox. His laid-back side sometimes strikes people as a lack of concern, he acknowledges. But at the same time, his enthusiasm for building ties to users has won him praise.

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SECTION 1706

Independents' backs to the barricades

BY DAVID A. LUDLUM
CW STAFF

With members of Congress back in Washington, the curtain has risen on the next act in the struggle by independent computer professionals to alter or overturn Section 1706 of the Tax Reform Act of 1986.

While MIS managers have had little difficulty addressing Section 1706, independent computer programmers, analysts and consultants promise to continue lobbying to amend or overturn the law, which has required many of them to become employees for federal tax purposes, impinging on their mobility.

One effort to ease the blow of 1706 will be led by the law's sponsor, Sen. Daniel P. Moynihan (D-N.Y.), according to Harvey Shulman, general counsel for the National Association of Computer Consultant Brokers and a partner with Washington, D.C., law firm Ginsburg, Feldman and Bress. "He thinks the IRS and the Treasury have done an inadequate job of carrying it out," Shulman says.

Moynihan's tax counsel, Joseph Gale, has confirmed that the senator will propose legislation affecting Section 1706 as early as this week. Moynihan will propose allowing technical services professionals and consultants to apply four or five clear-cut rules to determine, for tax purposes, whether they are employees or independent businessmen, Gale says. The rules would provide an option to the 20 common-law stan-

dards now in place, which many on both sides of the Section 1706 debate maintain are difficult to apply.

Gale says that some individuals who are not sure they can satisfy the test for independent status now would be able to do so under the new guidelines. "People are going to meet it who might have some questions under the last IRS ruling," he says.

Section 1706 denies technical service workers the "safe-harbor" provisions that since 1978 had given independent

Continued on page 61

MANAGERS ON THE MOVE

DHL ships MIS exec to front line

DHL Worldwide Express is moving many corporate information systems activities into its U.S. operating unit, DHL Airways, Inc., and has appointed **William H. Pigott** vice-president of MIS at the Redwood City, Calif., subsidiary.

Pigott is an AT&T veteran and was formerly MIS director of Western Hemisphere field services at DHL Worldwide. In his new position, Pigott will manage systems for billing, tracking and tracing, customs brokerage and office automation.

He will also coordinate programs for MIS research and development and serve on the chairman's committee, the firm's advisory group of senior executives.

"It kind of ties in with a major reorganization and puts MIS in a very positive position, reporting directly to the CEO. It's the backbone of our business," Pigott said.

Among his challenges will be the deployment of a new package tracking and tracing system and a dozen others linked to it. The new system is to run on a Unix-based Pyramid Technology Corp. Model 9840 multiple parallel processing system, replacing a 5-year-old Stratus Computer, Inc. processor that Pigott said is "just fully overloaded."

Martin M. Diesenhof has been named assistant vice-president of **Teachers Insurance and Annuity Association — College Retirement Equities Fund** in New York.

In his new position, Diesenhof will be responsible for the design, development and implementation of computer systems for the association.

Before joining the firm in 1985 as a systems officer, Diesenhof was affiliated with International Service Systems.

Edward J. Quinn has been named vice-president of information services at **Duchossois Industries, Inc.**, located in Elmhurst, Ill.

Quinn began his career with Duchossois in 1977 as manager of data processing for the firm's Chamberlain Manufacturing unit. Most recently, he served as director of management information services for Duchossois.

Randy Burkhart has been named vice-president of information resources management at **Princess House, Inc.** in North Dighton, Mass. The firm is a Colgate-Palmolive Co. subsidiary that supplies crystal wares.

Burkhart joined Princess House in 1984 as director of information resources management. Previously, Burkhart was employed by The Kendall Co., Xerox Corp. and Mobile Chemical Co.

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FROM PAGE 57

sue for top information systems executives, and the responses to the survey suggest that the area is similarly fraught with difficulty. Nearly 80% of all managers disagreed with the statement that strategic planning is primarily a question of choosing a methodology.

Index officials comment that many of the firm's clients select aspects of various methodologies or use individual approaches.

Obstacles

Again, few would discount the need to educate top managers regarding the role and potential of information systems, the No. 3 issue. But once more, there are several obstacles blocking the way.

More than half of the respondents agreed that education for senior managers now must be specific to their industry and business. But of much greater concern is the fact that less than one-fourth of those responding to the question agreed that their organization's managers have a strong desire to learn about information systems.

Finally, getting down to the implementation phase, respondents indicated that the wildly popular strategy of using information systems to gain competitive advantage is difficult or even dangerous for them to pursue.

First, strategic systems seem difficult to identify, let alone deploy. More than half the respondents disagreed that identifying them is easy and implementing them is the hard part, and only 14% said their organization has a special program for indentifying competitive systems.

Second, two-thirds of the respondents agreed that competitive systems only increase the cost of doing business — not an outcome that many senior executives would relish in this age of rampant restructuring.

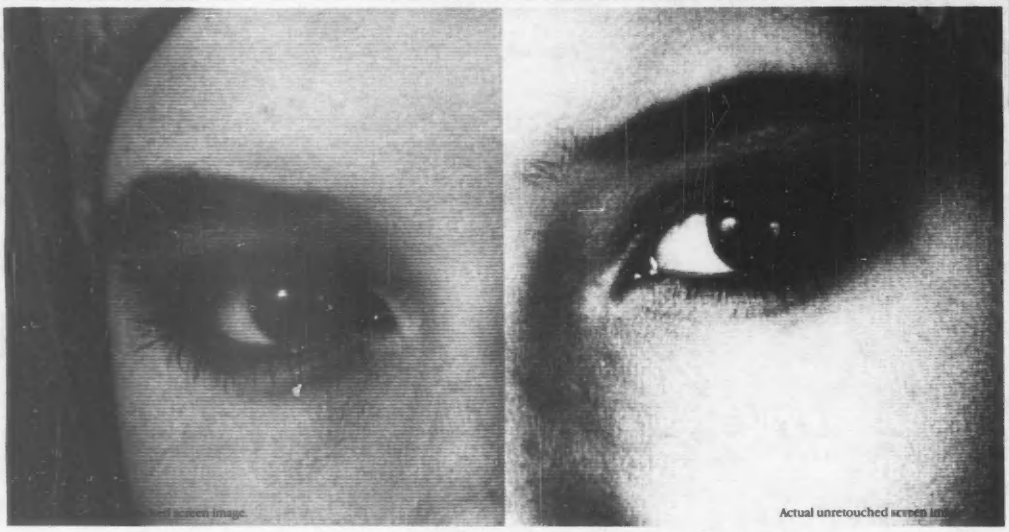
Logjams

While it rounds up the usual suspects in ranking the most critical MIS issues, the survey also identifies some major logjams along the way to addressing them.

It also underlines a consistency among the top concerns of MIS managers in a variety of industries. "Managers who felt that these issues were not important should be aware that they are swimming against a strong current," according to Index.

The firm urges those who acknowledge the issues as critical to work together with colleagues in other firms and industries, in the hope that they will find they have much in common.

Ludlum is *Computerworld's* senior editor, management.



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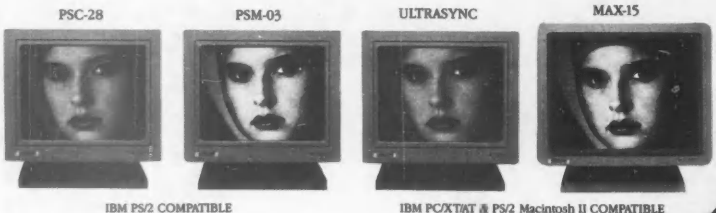

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Focus on Operations-VIII: Profile of the Professional. Las Vegas, Feb. 8-11 — Contact: International Association for Computer Operations Managers, 742 E. Chapman Ave., Orange, Calif. 92666.

Uniforum 1988. Dallas, Feb. 8-11 — Contact: Uniforum 1988, Suite 205, 2400 E. Devon Ave., Des Plaines, Ill. 60018.

Data Storage Interface Week. San Jose, Calif., Feb. 8-12 — Contact: Technology Forums, Suite 260, 80 W. 78th St., Chanhassen, Minn. 55317.

CAP '88 Conference and Exhibition on Desktop and Workstation Publishing Systems. Washington, D.C., Feb. 9-11 — Contact: Computer Aided Publishing, 90 W. Montgomery Ave., Rockville, Md. 20850.

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Interex Computing Management Symposium. Anaheim, Calif., Feb. 10-13 — Contact: Interex Conference Department, 680 Almanor Ave., Sunnyvale, Calif. 94086.

Independents

FROM PAGE 57

contractors in most fields the benefit of the doubt in questions of whether they were employees or legitimate independent businessmen for the purposes of federal income and employment taxes. Under the safe harbor, contractors could justify independent status on the basis of loose requirements, such as adherence to "standard industry practice."

Section 1706 was drafted by congressional staff members who were lobbied by officials of the National Technical Services Association, according to documents that Shulman obtained through the Freedom of Information Act and provided to *Computerworld*. The association's member companies generally employ salaried technical consultants and professionals.

As a result, since Jan. 1, 1987, technical service workers have had to bear the burden of proof that they are independent on the basis of the 20 common-law standards, which address the control a company has over its workers.

Among other effects, conversion from independent to employee status imposes income tax withholding on individuals and denies them income tax deductions for business expenses as well as relatively attractive Keogh retirement plans. Keogh plans are rough equivalents of Individual Retirement Accounts for self-employed people.

The tax withholding and other requirements of Section 1706 impose administrative costs on agencies that place individuals in contract jobs. Independent contractors and their brokers have also savaged the law for inhibiting efficiency and technology transfer and, thus, blunting American competitiveness.

The Senate approved Section 1706 in June 1986, but the action went virtually unnoticed until November of that year. Widespread confusion followed. The law addressed professionals placed in jobs with clients by a third party, such as a broker, but no one was sure whether it also applied to those who contracted directly with clients. The 20 standards seemed open to subjective interpretation.

"Initially, we really weren't cognizant of the potential ramifications of such an arrangement," says Jack Hines, an assistant vice-president in the Information Systems and Services Department at New York Life Insurance Co.

IRS sheds some light

In January 1986, amid an outcry from independent professionals and brokers, the Internal Revenue Service issued guidelines stating that Section 1706 applies to relationships between independent professionals and their brokers but not to direct relationships between professionals and clients. The IRS also waived early payments of employers' taxes due as a result of Section 1706.

Last May, with confusion continuing, the IRS extended and broadened the waivers and issued guidelines that apply Section 1706 to three hypothetical cases. The guidelines have been criticized as unrealistic.

The response among MIS organizations was, and has continued to be, "better safe than sorry." Under the direction of legal or human resources departments, many departments have avoided dealing with independent contractors — particularly those placed by third parties — or have ensured that the independents with whom they contract are someone's employees.

While Section 1706 does not explicitly impose a liability on the

Harvey Shulman

client if a worker placed by a broker is found to be improperly classified as an independent contractor, many companies are concerned they could be held liable. "It's my legal opinion that clients really are not at risk, but what the IRS has done is to create such confusion that it is very, very difficult to convince a client that they have no risk," Shulman, the brokers' attorney, says.

New York Life will now hire independent contractors placed by brokers, but the firm puts language in those contractors' agreements requiring the broker to take responsibility for the individuals' taxes, Hines says. The move has not hindered the company's ability to hire the contract workers it needs, he adds.

First Interstate Services Co., a data processing unit of First Interstate Bancorp in Torrance, Calif., is requiring contract workers to have a business tax identification number and be associated with an organization with more than one employee, according to Bill Murin, senior vice-president for human resources.

Independent contractors who worked for First Interstate have become employees of a broker or technical services firm or have set up their own businesses, depending on whether they could meet the common-law standards, Murin says. That has resulted in the company's loss of one or two out of roughly 50 of its former free-lancers, he adds.

Bearing the brunt

It has been independent computer professionals and their brokers who have borne the brunt of Section 1706.

Rusty Romaine of Silver Spring, Md., was an independent consultant from 1978 until last year, typically working on two to six contracts a year, he says. Romaine was halfway through a contract arranged by a broker to work for a telecommunications firm for six months when he got a letter Dec. 27, 1986, from the broker. It said he would have to become the broker's employee or produce payroll receipts from another company to continue working through the broker.

Not wanting to give up his independence — along with business expense deductions and a Keogh plan — and claiming that his broker had breached the terms of his contract, Romaine relinquished the remaining three months of work, which he says was worth $15,000. He did not work steadily again until September 1987, when he negotiated a contract directly with a client through his own corporation. "It's kind of hard to have the rug pulled out from underneath your feet," he says.

David Hicks, owner of Hicks and Associates in Lafayette, Calif., a broker of computer professionals, says he had to convert nearly half of the more than 100 professionals in his stable of contractors to employee status because of Section 1706.

As a result, Hicks says, he had to buy a payroll system and hire someone to manage payroll and contracts. "It's costing tens of thousands of dollars. My guess is my costs have gone up 10%," Hicks says. Over time, he claims, the costs will gradually be passed along to clients and, ultimately, to consumers.

In response to the outcry from brokers and independents, several senators and representatives have sponsored bills to postpone or repeal Section 1706 — including one House bill that attracted more than 100 cosponsors — but the bills failed to emerge from committee. A late effort by Moynihan to soften Section 1706 died last year when leaders deferred tax revision proposals in order to deal with the budget deficit.

While supporters of Section 1706 contend that opposition is fading, backers say they will continue to push to amend, postpone or overturn the legislature. "It is going to heat up again. It's going to get very, very unpleasant," attorney Shullman says.

MIS managers seem likely to continue to take developments in stride. "I think it is keeping a lot of lawyers in business," New York Life's Hines says.

Coke exec

FROM PAGE 57

"Bill is very outwardly focused toward servicing his user," says Christopher H. Hutchings, manager of corporate accounting. "His door is open. I can get to him pretty quick."

Before Hendry arrived at Coca-Cola, no one in the corporate information services group wanted to be the only person not on the sixth floor, Austin says. Now, the staff members are confident enough to work alongside users and not feel separated from their department, and "users love it," she says.

MIS blues

When he was hired four years ago, Hendry says, he heard his group's staff members say, "We don't have money. We don't have support. Nobody loves us. We can't do it."

He has worked at turning that perception around in two ways. Experience gained in previous jobs convinced Hendry that a small staff can be leveraged in powerful ways, and he proceeded to reduce Coca-Cola's staff while upgrading the level at which it worked.

Tapping his experience as MIS director for auto parts supplier Federal-Mogul in Michigan, he turned things around partly by shifting much of the development burden to outside contractors. At any given time, about 65 contract personnel work alongside 15 Coca-Cola corporate information services employees. Instead of designing systems and writing code, a staff member today is more likely to function as a project manager.

Hendry's other major thrust was in accelerating a process already under way at Coca-Cola: off-loading as much of the corporate information services burden as possible to end users by training half the 1,400-member administrative staff to use Information Builders, Inc.'s fourth-generation language, Focus. With the training, users are expected to provide maintenance for their own analysis and reporting applications.

The latter step has left users both admiring Hendry's prowess and rueful over his sharing the work load. Although willing to listen to users, "he's also ready to suggest the user do something different," Hutchings says.

Hendry recounts how he once agreed to develop a system for a user in the presence of Coca-Cola's chief financial officer, Douglas Ivester, and how Ivester chided him that what his system would accomplish could be done by hand on the back of an envelope. "And he was right," Hendry says cheerfully. "I've been accused of trying to dump the work load on the end user, and I'm guilty."

With a country boy look and a lean, 6-foot-2-inch frame, Hendry seems like he might have stepped out of the Stonewall Brigade, until he reveals that he is a native of Michigan and came south to take a job as development manager for Sangamo-Weston, Inc., a building supply subsidiary of Schlumberger Ltd.

He has managed to adjust to the change in climate. An avid golfer, he appreciates getting on the green for at least a day during January and February.

He also likes watching the Atlanta Hawks play basketball at the Omni arena and getting outdoors with his family on camping trips, although that activity has slackened as his two children have become teenagers.

A manufacturing high

Hendry also maintains an interest in the competitiveness of American manufacturing and recently read *The Reckoning*, a book by David Halberstam about Ford and Nissan. If he were not doing what he is, Hendry says, he would like to be in manufacturing management. "I get a kick out of making something. I can walk through a plant and get a really good feeling," he says. Between his jobs at Sangamo-Weston and Coca-Cola, he was a self-employed consultant in manufacturing software.

But behind Hendry's easygoing exterior lies a native shrewdness that, in some situations, makes him a tough bargainer.

Once, while considering a large software company's $100,000 package, Hendry heard out two salesmen and then had a contract drawn up listing the purchase price at $80,000. The salesmen had been instructed not to discount the deal, but when they appeared with their district vice-president, Hendry pushed the signed contract across the table at him. As the salesmen went into their final pitches, the vice-president picked up the contract and headed for the door. When he reached it, he interrupted the salesmen to ask, "Are you coming, boys?"

"There's no list price in that business," Hendry says, flashing his Cheshire cat grin.

Despite such shrewdness, Hendry shows a simple brand of loyalty. His allegiance to Coca-Cola is so intense that, although he says he misses them, he refuses to buy snacks made by Frito-Lay because the company is owned by archrival Pepsico.

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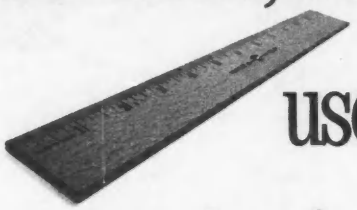
take up much space,  used

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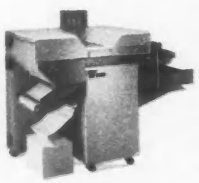
you'd say  Bull.

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31. Dir., Mgr., Supvr., of Programming
32. Programmer, Methods Analyst
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Clinton Wilder

Wall Street vs. the facts

In this election year, the computer industry's stock market activity is bearing out that time-honored maxim of presidential primaries: perceptions count more than facts.

In the New Hampshire Democratic primaries of both 1968 and 1972, the perceived winner of the primary was not the candidate who tallied the most votes. In those years, Eugene McCarthy and George McGovern, respectively, "won" by finishing second to Lyndon B. Johnson and Edmund Muskie but "exceeding expectations."

Now move the tape ahead to Friday, Jan. 8, 1988. Tandem Computers announced to the press and financial world that its December quarter had a glitch. Wall Street, which dislikes bombshells as much as Gary Hart campaign loyalists do, took this as a red alert that the computer business, which burned investors in 1985, was headed down the tubes again.

The market was so nervous that even what appeared to be positive news about U.S. unemployment took on a negative spin on Wall Street. "We're back to

Continued on page 67

IBM, AT&T chip in

Firms to share techniques with Sematech

BY ALAN ALPER
CW STAFF

NEW YORK — In a rare example of IBM sharing technology, Sematech last week disclosed that advanced memory chip manufacturing processes developed by IBM and AT&T will be the first two technologies studied by the consortium's 13 member companies.

At a press conference here, Austin, Texas-based Sematech said IBM will contribute all manufacturing techniques used in its 4M-bit dynamic random-access memory CMOS device, which is currently under development, and that AT&T will provide processes used to make its 64K-bit static RAM chip.

Both companies, which are also expected to invest approximately $8.5 million apiece in Sematech, will provide all manufacturing and engineering personnel required to expedite the technology transfer.

Picked from members

The two manufacturing processes were chosen from an undisclosed number of technologies offered by the 13 consortium members, according to Charles Sporck, chairman of Sematech and president and chief executive officer of National Semiconductor Corp.

AT&T's process was selected because it can be quickly transferred to the consortium; IBM's process represents next-generation memory technology that will further the research and development efforts of all Sematech members, Sporck noted.

Production processes used to make both memory devices can be easily tested by the consortium, he added, and address the needs of high-, medium- and low-volume semiconductor makers.

Generation of competition

"This is the starting point for the next generation of manufacturing processes," Sporck said.

Providing consortium members with in-depth manufacturing know-how will ensure U.S. semiconductor industry competitiveness, Sporck said. Knowledge gleaned from the R&D work can be used by member companies in manufacturing their own products, provided they receive approval from AT&T and IBM, he added.

AT&T and IBM said they contributed their technology because of benefits they expect to receive from joint R&D efforts.

William J. Warwick, president of AT&T's microelectronics division, said the technology transfer will eventually strengthen the entire semiconductor industry and provide his company with stable sources of supply. "We don't want to make all our own parts," he noted.

IBM executive Jack Kuehler said that despite Sematech's R&D work, his firm will continue to develop its 4M-bit RAM. "Results achieved by the consortium could help speed up our efforts," he said.

Lotus, TI strut past '87; Hogan, AST staggering

BY JAMES DALY
CW STAFF

Lotus Development Corp., Texas Instruments, Inc. and Stratus Computer, Inc. led a parade of vendors that left 1987 in a wake of robust revenue and net income growth, according to quarterly results released last week.

Other companies notching gains in their most recent fiscal quarter included Apollo Computer, Inc., AT&T, Cray Research, Inc., Intergraph Corp. and Computer Sciences Corp. But Hogan Systems, Inc., Harris Corp. and AST Research, Inc. all reported mixed quarters (see chart below).

Lotus. After recently completing its first quarter with revenue in excess of $100 million, Lotus tallied quarterly revenue of $115.6 million, up 41% from the $81.8 million recorded for the same quarter a year earlier.

Net income for the Cambridge, Mass.-based software giant was $22.9 million, or 50 cents per share. This represented a 47% increase over the $15.6 million, or 35 cents per share, recorded for the same quarter in 1986.

For 1987, Lotus had revenue of $395.6 million, a 40% increase over its 1986 sales of $282.9 million. Net income for the year was $72 million, or $1.58 per share, a 49% increase over 1986's net income of $48.3 million, or $1.03 per share.

Much of the company's success can be tied to the sales growth of its bedrock products: 1-2-3, Symphony and Freelance Plus. "Sales of 1-2-3 and Symphony were up over 30%, which is much higher than most people were assuming they'd reach," said Bruce Johnston, an analyst with First Boston Corp. in New York. "This growth trend will continue, particularly this year, because 1-2-3 and Symphony will both receive major upgrades."

TI. The Dallas-based firm credited the recovery of the semiconductor industry — which for years had dogged the company with losses — and a 17% growth in its defense electronics business with spurring a quarterly revenue growth of 15%, to $1.5 billion.

Net income for TI's fourth quarter came in at $94 million, or $1.05 per share, a 248% increase over the $27 million, or 30 cents per share, recorded in the same period in 1986.

The computer maker notched a yearly revenue of $5.59 billion, a 12% jump over 1986's $4.97 billion. Net income for the year grew a whopping 965% and came in at $309 million, or $3.59

Continued on page 65

1987 fourth-quarter earnings

Strong sales ring up revenue growth, rising income for most industry vendors

	Net income October through December (in millions)	Percent change[1] from 1986	Revenue October through December (in millions)	Percent change from 1986
AST Research	$2	(46)	$92.6	96
Bolt Beranek and Newman	$4.3	29	$78.1	46
Cray Research	$34.1	48	$163.6	18
Computer Sciences	$10.3	36	$287.3	12
Harris	$24.2	20	$492.8	(6)
Hogan Systems[2]	$1.9	(34)	$12.1	11
Intergraph	$24.7	27	$195.3	24
Lotus	$22.9	47	$115.6	41
Maxtor	$5.2	(24)	$74.1	46
Sequent Computer Systems[3]	$1.1	101	$12.1	68
Stratus	$6.6	77	$55.2	56
Texas Instruments	$94	248	$1.5B	15
Western Digital	$8.3	(27)	$160.7	40
Wyse Technology	$7.4	55	$128.1	75

[1] Parentheses indicate decrease
[2] Net income includes extraordinary tax credit of $914,000
[3] Net income includes extraordinary tax credit of $268,000

CW CHART

Regrouped Sytek rolls up LAN sleeves

BY KATHY CHIN LEONG
CW STAFF

MOUNTAIN VIEW, Calif. — After Sytek, Inc. endured a corporate reorganization and the layoff of 14% of its work force last June, the local-area network vendor went into a purposeful hibernation for six months.

Breaking the silence, Sytek President George Klaus told *Computerworld* recently that his company is planning to announce new products early this month that support networking standards and various cabling media.

The LAN vendor, which has traditionally supported only broadband cable, said that part of its goal is to provide hardware and software that will tie its networks into wide-area networks

George Klaus

such as Digital Equipment Corp.'s Decnet and IBM's Systems Network Architecture.

"We have been working on all of this the last 18 months," Klaus said. "We are developing support for multiprotocols, large networking solutions and heterogenous environments. We have to do this so we don't lose momentum with our existing customer base."

More than 10 network wares are set to be part of the February lineup, including an Ethernet Transmission Control Protocol/Internet Protocol adapter card and cabling connection for the Sytek networks over twisted-pair wiring and fiber-optic cable.

"These are all hot areas to get into," observed Bruce Coughran, an industry analyst at Computer Intelligence, a La Jolla, Calif., market research firm. "In 1987, there was an increase in twisted-pair and baseband cabling. The fiber-optic connection has yet to take off."

The Sytek strategy focuses on selling to large-network customers, and Klaus said he be-

Continued on page 67

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Lotus, TI

CONTINUED FROM PAGE 63

per share, compared with $29 million, or 24 cents per share, recorded a year earlier.

"The semiconductor industry has experienced an upturn, and they're growing along with it," said Michael Gumport, senior electronics analyst with Drexel Burnham Lambert, Inc.

Stratus. Avoiding the fourth-quarter earnings drop experienced by archrival Tandem Computers, Inc., Stratus reported fourth-quarter revenue of $55.2 million, up 56% from $35.4 million. Net income was $6.6 million, or 33 cents per share, up 77% from 1986's quarterly figure of $3.7 million, or 19 cents per share.

The Marlboro, Mass.-based manufacturer also posted a 48% jump in revenue for the year, rising to $184.2 million from 1986's $124.6 million. Net income increased 43% to $19.4 million, or 97 cents per share, compared with $13.5 million, or 70 cents per share, recorded for 1986.

But analysts cautioned that although Stratus is not in trouble, its growth rate has slowed. "The growth figure is actually a deterioration from the 55% growth they showed a year earlier, 90% the year before that and 105% the year before that. I think that is a source of considerable concern to Stratus," said Omri Serlin, editor of the Los Altos, Calif.-based "FT Systems" newsletter.

"They don't want to be viewed only as a fault-tolerant systems supplier but as a broad-based on-line transaction processing systems supplier," Serlin added. "But the natural hunting ground for OLTP players is in the mainframe category, and that pitches them against IBM, which Stratus doesn't want to do." Stratus is the OEM supplier of IBM's System/88s.

AT&T. The communications giant posted its highest quarterly revenue in two years, rising just less than 1% to $8.60 billion from $8.52 billion recorded for the same quarter a year earlier. Net income was $498 million, or 46 cents per share, compared with a loss of $1.17 billion, or $1.11 per share, in the equivalent period in 1986.

Yearly revenue for the firm was $33.59 billion, a decrease of 1% from the $34.08 billion recorded in 1986. Net income for the year jumped more than 930% to $2.04 billion, or $1.88 per share, compared with $139 million, or 5 cents per share, recorded for 1986.

Results in 1986, however, included charges of $3.2 billion that reduced net income by $1.7 billion, or $1.59 per share. The charges resulted from business restructuring, a change in accounting for depreciation and a writedown of assets and inventory.

The company said sales of computers and business communications products were relatively stable compared with 1986, picking up momentum after a slow start in the first half of the year. Much of the earnings growth stemmed from AT&T's massive cost-cutting efforts.

Apollo. The Chelmsford, Mass., workstation pioneer rang up strong fourth-quarter results, as revenue of $163 million exceeded year-earlier levels by 35% and profits nearly doubled to $10.5 million, or 29 cents per share.

For the year, Apollo posted sales of $553.7 million, up 41% from 1986 sales of $391.7 million. Profits from operations more than tripled to $28.2 million, or 78 cents per share, but net profit was $6.5 million, or 18 cents per share less, because of a third-quarter charge for unauthorized foreign currency transactions.

Cray. The supercomputer maker posted quarterly revenue of $163.6 million, an 18% rise over the $138.2 million recorded for the like period a year earlier. Net income jumped 48% and clocked in at $34.1 million, or $1.08 per share, compared with $23.3 million, or 75 cents per share, recorded a year earlier.

Revenue for the year for the Minneapolis firm came in at $687.3 million, a 15% increase over the $596.7 million recorded for 1986. Net income for the year was $147.1 million, or $4.65 per share, compared with $124.8 million, or $3.99 per share, recorded for 1986.

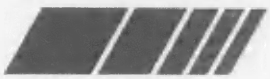
Chairman and Chief Executive Officer John A. Rollwagen noted that the firm installed 55 computer systems during 1987: 43 new and 12 used systems.

AST Research. The maker of microcomputers and enhancements announced second-quarter revenue of $92.6 million, a 96% jump over the $47.1 million recorded in the same period a year earlier. But net income for the Irvine, Calif., manufacturer dropped 46% to $2 million, or 17 cents per share, compared with $3.7 million, or 32 cents per share, earned during the same period in 1986.

Hogan Systems. The Dallas-based banking application software firm's revenue grew 11% to $12.1 million, up from $10.9 million recorded for the same quarter in 1986. But net income dropped 34% to $1.9 million, or 13 cents per share, down from $2.9 million, or 20 cents per share, continuing Hogan's current slump. The net income included an extraordinary tax credit of $914,000.

Hogan's revenue from sales of its software products took the most significant drop, falling 21% to $3.3 million from $4.2 million recorded for the same quarter in 1986.

Applied Data Research, Inc. The mainframe data base software house said it notched revenue for 1987 of $172.9 million, which was 31% higher than 1986's results. Because the Princeton, N.J.-based firm is no longer a publicly traded company and is now a division of Ameritech, the firm was not obliged to release net income figures.



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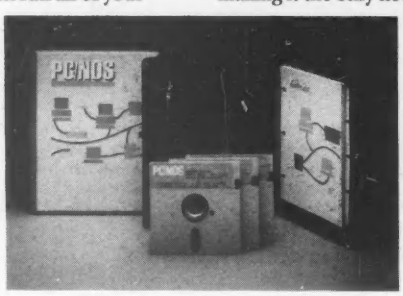

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Wilder

FROM PAGE 63

the good-news-is-bad-news syndrome," one market analyst says.

But for the computer industry, the worst ironies were yet to come. On Jan. 19, IBM announced that its frustrating two-year streak of declining earnings was over and that fourth-quarter profits were up 50% from 1986 levels.

Influential IBM stock watchers, however, saw things differently. Their revenue expectations were not met, and they saw IBM's real profit growth prospects, minus tax and currency boosts, as thin. Earnings estimates for 1988 were dropped, and IBM stock suffered a six-point price slide from which it has yet to recover.

The IBM effect quickly snowballed into a "get out of high tech" selling spree. While virtually every major computer vendor was reporting solid — in some cases, stellar — fourth-quarter results, their stock prices were taking it on the chin.

What, precisely, is going on here? Several analysts who don't share in the gloom and doom say the market paranoia stems from memories of 1985, when most investors ignored what turned out to be early slump warning signs. Not wanting to be caught again, investors in 1988 are ready to bail out of computer stocks at the first hint that something, somewhere, might be amiss.

But the vendors themselves appear to be drawing battle lines against Wall Street for 1988. The fight is nothing new: many industry chief executives — Control Data's Bill Norris and Cullinet's John Cullinane among them — have long lobbied for freedom from the tyranny of meeting quarterly financial goals.

Microsoft recently took it upon itself to issue a bullish microcomputer *industry* forecast for the first six months of 1988; Apple followed suit last week. Both highly successful vendors want to reassure the investment community not only that each company's fundamentals are sound but that the market that will turn those fundamentals into profits is healthy.

Then there is Sterling Software. Top management of the Dallas-based systems software house has apparently decided it doesn't want to deal with Wall Street at all; it will try to buy the company in a leveraged buy-out.

The investment community is understandably nervous about what computer stocks will do next; the industry's chief executives just want to be left alone to concentrate on profits, market share and long-term strategies. In the wake of the crash, those two interests have never been more in conflict.

One thing is clear. The company that falls short of forecasts is certain to be branded a loser on Wall Street. When that happens, I'm sure Ed Muskie will be able to empathize.

Wilder is *Computerworld's* senior editor, computer industry.

Sytek

FROM PAGE 63

lieves the new products will give Sytek an entry into companies that would prefer not to use broadband cabling. Many Sytek users, such as Mountain Bell and General Motors Corp., have 500 to 1,000 connections on their Sytek LANs. Since its founding in 1979, the firm has attracted more than 1,000 customers and has attained more than 300,000 installed connections.

Klaus announced that if all goes well, the company will go public this summer. In 1984, Sytek filed a prospectus with the Securities and Exchange Commission but decided not to go public when IBM discontinued an OEM agreement that accounted for half of Sytek's revenue.

Users, in the meantime, say they are pleased that Sytek is finally listening. "Sytek used to be really hot on supporting only their proprietary network," said one user at Eastman Kodak Co. who is evaluating the feasibility of expanding Kodak's Sytek 2000 network.

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Apple's Macintosh not just a toy

PCs making comeback as firms discover desktop's creativity, versatility

BY SALLY CUSACK
CW STAFF

Don't disregard everything you learned on your old Macintosh; it could come in handy someday. Especially if you are looking for a career in microcomputer management or support. Or publishing. Or advertising. Or even graphic arts, for that matter. Familiarity with the Apple standard is slowly gaining recognition as a valuable skill.

"People using the Apple Macintosh tend to add a creative aspect to their work," says Rand Miller, programmer and consultant at Citizens National Bank in Henderson, Texas. "The product tends to look a little better and show a little more effort. It would definitely be a big plus for the work we are doing here."

Though interest in Apple Computer, Inc.'s products is growing, positions requiring Apple expertise are usually created after the systems are already installed throughout a company.

Support hard to come by

"Support for the Apple Macintosh is a little outside the trend in corporate organizations," says Bill Storms, microcomputer center manager for the Washington State Department of Transportation in Olympia. "It tends to arrive through the back door."

Generally, there is slow growth in the volume of interest in the Macintosh, and MIS usually doesn't welcome the second standard the Mac may add to the shop, Storms says.

However, 80 Apple Macintosh Pluses are scattered throughout the department's divisions, serving several different functions. Fifty are used in the maintenance section, issuing weight and height permits for hauling on the road.

Running the numbers

When headquarters distributes the district budgets, each district reworks the figures for bottom line coordination using a spreadsheet program on the Macintosh.

The districts also use Macintoshes to directly enter payroll information to the IBM mainframe via 3276 controllers.

Two additional positions have been added to the department since the Macintoshes arrived: computer information consultant and application trainer/data processing liaison.

"The closet Mac user is eventually gaining the passive approval of MIS," Storms says.

At Citizens National Bank, the number of Macintosh computers has grown in recent years from one to eight. Two Macintoshes are used as emulators, connected to an IBM System/38. The rest handle a variety of functions, including spreadsheet applications, forms design and offline audits.

> "MACINTOSH USERS are more adept at a broader range of software than the traditional IBM Personal Computer user. . . . [Mac] users are usually fluent in several software applications."
>
> RAND MILLER
> CITIZENS NATIONAL BANK

The bank also uses Macintoshes in its advertising department, expanding the functions into publishing.

Savings achieved

This additional use was not planned, but Citizens National Bank began to realize a substantial savings from Apple technology.

The company is in the process of installing a signature card system, which will include a Macintosh at the drive-up teller window.

"Macintosh users are more adept at a broader range of software than the traditional IBM Personal Computer user," Miller says. "Because the Apple interface is so similar between packages, users are usually fluent in several software applications, such as data bases, word processing and spreadsheets."

Caterpillar, Inc., headquartered in East Peoria, Ill., brought in the Macintosh for desktop publishing a couple of years ago.

"Initially, we were doing desktop publishing on IBM PCs running DOS," says Jerry Meixsell, publishing systems supervisor at Caterpillar. "But the graphic designers decided the Mac would be better for their work."

As a result of that recommendation, Caterpillar installed five Macintosh Plus computers and several Macintosh SEs.

Desktop publishing functions are shared between the IBMs and Apples. The company expects to connect the Macintoshes to IBM 3270-type controllers in the future.

Currently, there are no Apple experts on the Caterpillar staff. Instead, training is provided by the local Apple representative, and the company contracts with an outside desktop publishing consultant. The goal is to cross-train the staff in both areas.

"We see a fairly sizable impact in the Macintosh world," Meixsell says, "and we are looking at installing Macintoshes in the advertising department. We need to develop skills to lead our corporate users in the right direction."

In the future, Meixsall will be looking to employ someone not only with Apple expertise but with an additional background in all platforms of desktop publishing, including engineering and workstation technology.

Standard acceptance

Despite the growth in Mac use at Caterpillar, corporate policy is to take advantage of the current IBM PC, and there is some reluctance to accept the Apple standard outside of special-purpose applications, Meixsell says.

Not all corporations, however, struggle with second-standard acceptance. For example, Pat Natale, vice-president of auditing at Prudential Insurance Co. in Newark, N.J., says standards were not an issue when the company first installed its Macintoshes.

Natale is responsible for 355 auditors and end users at the company, which uses approximately 175 Macintoshes and 75 IBM PCs tied into an electronic mail system.

Cusack is a researcher for *Computerworld*.

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We have a career opportunity for a Senior Systems Analyst in our Corporate MIS department. You will function in the role of a business consultant, acting as the primary contact for users and as project leader in support of our financial, administrative, and human resource computer software systems.

This position requires a strong emphasis in financial applications with exposure to a manufacturing environment. A 4-year college degree in business or finance is preferred. 2 to 4 years as a systems analyst or project leader is required. Programming experience as well as exposure to operations necessary. Must have outstanding interpersonal and communication skills.

We offer a beautiful environment with full benefits (401k, dental, stock, and more), as well as a superb on-site fitness center. Send resume with current salary to: **Mary Wall, Nicolet Instrument Corporation, P.O. Box 4370, Madison, WI 53711-0370.**

An Equal Opportunity Employer M/F/H/V

I/S Director of Training and Development

As one of the nation's most successful insurance and financial services companies with over $1 billion in annual sales volume and five year compounded growth rate of 23%, we continue to invest in the most advanced information systems. Our commitment to technical excellence is reflected in our state-of-the-art environment (several IBM 3090's, DEC, VAX, MVS/XA, IDMS and a nationwide network of 3000+ terminals). Equally important is the development of the 500 people who support PROGRESSIVE businesses with information services. To lead and manage the technical, professional, and business training of our people, we seek a Director of I/S Training. This senior level manager will have a $1.5 million+ budget, a dedicated staff of nine professionals and a goal of ten days of annual training per person.

The succesful candidate will have:

- A proven track record of accomplishments as a result-oriented manager, effective technical training and I/S professional
- A four year degree; advanced degree preferred
- Current experience in a large IBM environment

Compensation and benefits are tailored to attract the exceptional candidate. For prompt, confidential consideration, please forward your resume and salary history to: **Rex Wolf, President of Information Services, The Progressive Companies, 6500 Wilson Mills Road, Box NB, Mayfield Village, OH 44143.** Equal Opportunity Employer, M/F/H/V.

progressive

3090

REASONS...

Some of our best MIS professionals came to Glaxo to work on our powerful IBM 3090 systems. Some were attracted by our outstanding variety of sophisticated data management and manipulation software, such as CSP, DBII, QMF, File Aid, Excelerator, FOCUS, SAS, and others, more specifically:

- *IBM 3090/4381 OS/MVS XA for Business Applications*
- *Prime 4955/VAX/VMS 8700, 8800 for Scientific Applications*

Others were drawn by the unusual diversity of technical challenges available at the nation's fastest growing research-oriented pharmaceutical firm.

A common denominator? Every one of these people appreciates our commitment to ongoing acquisition of state-of-the-art tools. It's a commitment backed by the resources of a highly profitable company... one that genuinely values its technical professionals, and rewards them accordingly.

If your qualifications meet our requirements, it stands to reason you'll want to join us in one of these key positions.

Systems Analysts II

Two key positions are currently available:

- One position supports scientific end-users using specialized scientific PC software, and
- One position supports commercial end-users using standard business PC software.

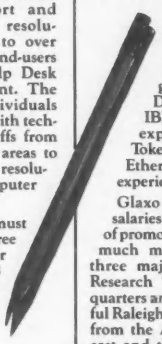
The successful candidates will provide prompt microcomputer software assistance and support and problem resolution to over 1,200 end-users in a Help Desk environment. The selected individuals will also work with technical support staffs from all MIS functional areas to coordinate the timely resolution of complex computer problems.

To qualify, candidates must possess a Bachelor's degree in Computer Science or related area and 6-8 years of end-user computing and microcomputer experience, some of which was in a Help Desk role.

For the business end-user support position, advanced knowledge of microcomputer operating systems and application software, such as PC-DOS, DisplayWrite 4, Smart Database, dBase III Plus and Lotus 2A is required.

For the scientific end-user support position, advanced knowledge of microcomputer operating systems and applications software is required and knowledge of Chemtext, PC-SAS, Chembase, PC/Gene, TGraf, Chemtalk, Sci-Mate, RS/1, MASS-11, and MASS-11 DRAW is desirable.

Strong analytical skills, proven ability to solve computer-related problems with an emphasis on software troubleshooting, and excellent verbal and written communication skills are essential for both positions. Prior experience working with a pharmaceutical company or scientific research firm is desirable, as is SAS, CSP, CICS, MVS, QMF and DB2 programming experience; DEC VAX All-In-1, IBM DISOSS and PS/PC experience; and IBM Token-Ring and/or VAX Ethernet network support experience.



Glaxo offers outstanding salaries and benefits, a policy of promotion from within, and much more. Surrounded by three major universities, our Research Triangle Park headquarters are located near beautiful Raleigh, NC, just three hours from the Atlantic Coast to the east and three hours from the Smokey Mountains to the west. For prompt consideration, please send your resume, including salary history, to: Department 3650X822, Glaxo Inc., P.O. Box 13398, Research Triangle Park, NC 27709. An Equal Opportunity Employer M/F/H/V. (No phone calls, please.) No private agency referrals, please.

Glaxo Inc.

Five Moore Drive
Research Triangle Park
North Carolina, 27709

DIRECTOR OF MIS

We are conducting a search for one of our clients.

A rapidly growing retailer moving to data base technology and in-store processors, is searching for a dynamic, take-charge MIS director interested in a challenging opportunity. The candidate must have experience managing an MIS department as a business: planning, budgeting and supporting the company's business objectives with technology.

A bachelor's degree is required; retail/distribution experience is a plus.

A competitive salary and an excellent benefits package is offered. All inquiries held in confidence. If you have the qualities we are looking for, please call 214/969-8371 or send a resume to Scott Evans, Arthur Young, 2121 San Jacinto, Ste. 500, Dallas, TX 75201.

Arthur Young

A MEMBER OF ARTHUR YOUNG INTERNATIONAL

An Equal Opportunity Employer M/F

FACULTY POSITION, Purdue University, School of Technology, Computer Technology Program at Columbus. Assistant Professor (tenure track) in 2-year associate degree programs. Primarily evening classes starting in August. Must have business or industrial experience, teaching experience, masters degree, strong background in IBM mainframe systems including business applications in COBOL, JCL and be capable of teaching introductory courses in systems analysis, and BASIC and FORTRAN in a microcomputer environment. 10-month appointment; salary commensurate with qualifications and experience. Send Vita and 3 letters of reference by March 15, 1988 to: Doctor Philip L. Nine, Purdue University, 4601 Central Avenue, Columbus, IN 47203. PURDUE UNIVERSITY IS AN EQUAL OPPORTUNITY/AFFIRMATIVE ACTION EMPLOYER.

Recruit qualified computer and communications professionals with the IDG Communications Computer Careers Network of eight leading computer newspapers.

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You choose the region. If you wish to recruit within a specific area, you can advertise in the regional editions of the newspapers you choose - East, West, or Midwest. Of course, national buys of individual newspapers or various combinations are also available when you need to extend your reach.

You don't pay for readers you don't want. Gone are the days when you have to worry about paying for waste circulation. The Computer Careers Network puts you in touch with qualified computer professionals - and only those qualified computer professionals you need to reach.

To put the new Computer Careers Network to work for you - regionally or nationally - call the sales office nearest you. Or contact John Corrigan, Recruitment Advertising Director, at 617-879-0700. And if you hurry, you can still get in on the special low introductory offer.

Sales Offices: **BOSTON:** 375 Cochituate Road, Box 9171, Framingham, MA 01701-9171, (617) 879-0700; **NEW YORK:** Paramus Plaza I, 140 Route 17 North, Paramus, NJ 07652, (201) 967-1350; **CHICAGO:** 10400 West Higgins Road, Suite 300, Rosemont, IL 60018, (312) 827-4433; **LOS ANGELES:** 18004 Sky Park Circle, Suite 100, Irvine, CA 92714, (714) 250-0164; **SAN FRANCISCO:** 500 Airport Blvd, Suite 400 Burlingame, CA 94010, (415) 347-0555

SYS/38 PROFESSIONALS

Keane, Inc. is a $50M software services company. We are currently staffing a major project to support IBM System/38 operating software. As a result, we are looking to fill a wide variety of positions. To qualify, you must have a minimum of two years of programming (any language) on a S/38, and expertise in one of the following areas.

OPERATIONS
DATA BASE
COMMUNICATIONS
APPLICATIONS

The successful candidate will have: a demonstrated ability to learn new skills, strong commitment to project goals, and proven interpersonal abilities. These high visibility opportunities offer excellent technical and professional growth, as well as individualized training.

Generous relocation packages are available. We offer competitive salaries and a superb benefits package. Local interviews will be scheduled. For further information, call Barbara Gavin at: (612) 546-3481, or send your resume to her attention at: Keane, Inc., 10201 Wayzata Boulevard, Suite 350, Minnetonka, MN 55343.

THE ESSENTIAL PROFESSIONALS

KEANE

An equal opportunity employer

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- ✓ Aggressive, growth-oriented goals

You'll find all the answers at TRECOM Business Systems, Inc., a dynamic, rapidly growing company led by recognized leaders in the consulting services industry. From our founding in January 1985, we've grown to over 475 data processing professionals serving clients in the New York/New Jersey metropolitan area.

If *your* goals are high, and your skills include at least 2 years experience in the following:

- **UNIX Applications and Internals Experience**
- **'C'**
- **Relational Databases**
- **STRATUS**
- **VAX VMS**

We'd like to talk with you. Please send your resume in confidence to: **Director of Recruiting,**

TRECOM
Business Systems Inc.

333 Thornall Street
Edison, New Jersey 08837
(201) 549-4100

One Galleria Tower, Suite 500
13355 Noel Road
Dallas, Texas 75240
(214) 960-7015

Come see us at UNIFORUM, February 9-11, 1988
INFOMART, 1950 Stemmons Freeway, Dallas, Texas

An Equal Opportunity Employer CW3

•The person who waits for things to happen is still waiting! CTG makes things happen and we're looking for individuals who do the same.

Computer Task Group is one of the nation's leading software development services firms with the technical and financial strength to complete the largest and most complex projects on time and on budget.

CTG is committed to employee personal growth through its unique career development program. This includes challenging assignments, state-of-the-art training, excellent salary and benefits package. In addition, the Carolina's boast a mild climate, below average cost of living and unlimited recreation activities.

Excellent opportunities exist in **The Carolina's** for individuals with 1+ years experience in **IDMS, DB2, SQL** or **VAX**. We are offering a special training bonus for individuals hired during the month of February.

- **ADSO** for the **IDMS** Professional • **RDB** for the **VAX** Professional
- **DB2** for the **SQL** Professional

Don't Wait! CALL or RUSH your resume to either CTG office.

GREENVILLE
150 Executive Ctr. Dr.
Greenville, SC 29615
(803) 297-4790

CTG

RALEIGH
5540 Centerview Dr.
Raleigh, NC 27606
(919) 851-9008

Equal Opportunity Employer

SYSTEMS/ APPLICATIONS PROGRAMMERS

Software Alternatives, Inc. is a nationally recognized software development firm with over 200 professionals in 10 cities dedicated to the sales and support of IBM 430X and S/36/38 computers. Our growth plans for the Chicago, Columbus and Toledo areas in 1988 have created challenging opportunities for individuals with the following experience:

- MVS/VM/VSE
- IMS/IDMS
- MARKETING
- COBOL
- CICS
- RPG II/III

For more information, please write:

IBM

Software Alternatives, Inc.
Mark Crawer
4641 Monroe Street
Toledo, OH 43623

EOE-M/F

PROGRAMMER/ANALYST

Community Coffee Company, a prominent regional manufacturing company serving a variety of retail food and institutional markets in Louisiana, Mississippi & Texas, is seeking candidates for the position of Programmer/Analyst at our Baton Rouge LA corporate location. Qualifications include:

- Minimum 2-4 years S/38 experience,
- Extensive RPG III, CL, Communications, PC Interface experience
- Systems development and project management track record preferably in manufacturing/ distribution,
- BS in Computer Science or related field.

Send resume with salary history & requirements to: **COMMUNITY COFFEE CO., INC., PERSONNEL DEPARTMENT, P.O. BOX 791, BATON ROUGE, LA 70821**

PROGRAMMER/ANALYSTS & SYSTEMS PROGRAMMERS

FOR CAROLINAS AND SOUTHEAST

We have opportunities for on-line and database programmers and systems programmers for both in-house and consulting positions. Fee Paid. Please call or send resume to:

Keith Reichle, CPC
Systems Search, Inc.
203 Heritage Park
Lake Wylie, S.C. 29710
803/831-2129

(local to Charlotte, NC)

SYSTEMS ANALYST II
Data Communications Specialists
Salary dependent upon qualifications

Oklahoma City is seeking candidates with broad knowledge of data communications hardware and software, including peripheral-to-mainframe, PC LAN's, and computer networks with bridges and gateways to multi-vendor networks and mainframes. MIS is moving toward distributed, multi-vendor data processing with extensive intersystem communication. Successful candidate will assist in the planning, development, and implementation of systems in that environment. Please submit resume by February 26, 1988 to:

The City of Oklahoma City
Personnel Dept.
Civic Center Music Hall
Room B-2
201 Channing Square
Oklahoma City, OK 73102
(405) 231-2536

NASA National Aeronautics and Space Administration

TELECOMMUNICATIONS APPLICATIONS ENGINEER

ADVANCED COMMUNICATIONS TECHNOLOGY SATELLITE (ACTS) PROJECT

Join our dynamic development team and participate in a highly visible experimental communications satellite system called ACTS which is the forerunner of the next generation of commercial communication satellites.

You will be responsible for planning and coordinating the voice, data and video application experiments using the ACTS system. Your duties will allow you to interact with a wide variety of government, industry and university experimenters.

Salary range is $38,727 to $50,346 depending on your education and experience.

Qualifications:

- BS or Advanced Degree in Engineering or Physics
- A minimum of 3 years related experience in Telecommunications
- U.S. Citizenship

To pursue this opportunity, send resume and salary history to:

Sandra App, MS 500-301
National Aeronautics and Space Administration
Lewis Research Center
Cleveland, OH 44135

Resumes must be received by March 11, 1988.

NASA IS AN EQUAL OPPORTUNITY EMPLOYER

ENGINEER

CLARIS

Software Engineers

CLARIS Corporation, Apple's new software subsidiary, is seeking creative, hands-on managers and engineers with text, graphics and/or database software development experience to develop Macintosh™ applications.

All positions require a BS (MS preferred) in Electrical Engineering or Computer Science, or equivalent, and 5+ years' development experience using C, Pascal or 68000 assembly languages on bit-mapped workstation applications like MacWrite™ or MacDraw™ Experience with Macintosh is desirable. In addition, management positions will require 3+ years in a supervisory capacity.

If you are motivated by direct involvement and the opportunity to make a meaningful contribution in a dynamic development environment with a unique start-up, send your resume with SALARY HISTORY AND REQUIREMENTS to CLARIS Corporation, Dept. 1-20, 440 Clyde Avenue, Mountain View, CA 94043. EOE. No phone calls, please.

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DIRECTOR, DATA PROCESSING AND COMPUTER OPERATIONS

SALARY TO $80,000

Major Washington, D.C. Metropolitan area Financial Corporation seeks ambitious executive who desires a fast track to a senior/officer position. Your track record should reveal a high degree of focus and commitment, visibly demonstrating a pattern of career achievements.

We require excellent management and technical skills, extensive knowledge and experience in an IBM Data Processing (IBM/MVS/XA Systems) environment, production, and related operations support functions. Your charter will include supervising and motivating a highly technical staff, contributing to the development of strategic plans, and ensuring that the DP function meets our user needs, and continues to be regarded as state-of-the-art in the industry.

Communications will be entirely confidential. For prompt consideration, send resume with cover letter to:

Director Search
P.O. Box 1100
Columbia, MD 21044

An Equal Opportunity Employer

Computers

Information Systems Opportunities

Oglethorpe Power Corporation, one of the nation's leading electric utilities, seeks qualified candidates for the following positions in our information systems department. The positions are based at our corporate headquarters in suburban Atlanta, Ga.

End-User Systems Analyst
Responsibilities include support and training for end-users of information center software and hardware products and participation in the development of end-user systems models. Requirements include bachelor's degree and three years direct experience in system analysis, design and installation.

Systems Programmer
Responsibilities include providing technical support for computer system software. Requirements include a bachelor's degree and two years of systems programming experience in IBM VMS or OS system software.

For confidential and immediate consideration, submit resume to:

Oglethorpe Power Corporation
Human Resources Department
P.O. Box 1349
Tucker, Georgia 30085-1349

Oglethorpe Power Corporation
An Electric Membership Cooperative
An Equal Opportunity Employer

OVERSEAS ASSIGNMENTS SAUDI ARABIA

MVS/VM System Programmer
Six years direct MVS and VM system support including MVS and VM installation and generation, DASD configuration, TSO and CICS support, JCL support for application development and system maintenance, and system tuning and performance control.

VTAM/NCP Network Manager
Six years direct support of VTAM/NCP in an SNA environment including VTAM/NCP installation and generation, IO devices configuration and definition, network problem definition, and network performance monitoring and control.

IDMS DBA
Minimum of five years direct support of IDMS including all database administration functions-database design requirements definition, design (conceptual and physical), implementation under IDMS/R, IDMS installation and generation, database tuning and performance control, database restructuring.

Production Control Specialist
Six years direct production support of online information systems (Financial, Human Resources Systems, etc.) in an MVS environment. Experience must include production procedures design, JCL support, applications installation and initialization, JOBs scheduling, and backup, recovery, and archive procedures.

C Programmer
At least four years direct C programming experience in DOS 3.x environment including device drivers, graphics, etc. Experience with MS DOS BIOS and internals is a must.

Excellent salaries and benefits. Please send resume to:

KSU Project Manager
AED
1255 23rd Street, N.W. - Suite 400
Washington, D.C. 20037

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SOFTWARE/HARDWARE

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If you qualify, call Howard Levin or Maureen McCue at 800-222-0153 or (in NJ) 609-667-4488, or send your resume to either address listed below. Our client companies pay all costs.

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Dublin Hall, Suite 201, Dept. C, 1777 Walton Rd.
Blue Bell, PA 19422 *(Mail address only)*
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San Diego, CA

Sharp Healthcare, a community leader in medical services continues its MIS commitment to state-of-art technology. The integration of IBM 4381, and clinical and financial software within our multi-facility network provides a unique challenge for the talented computer professional. All these positions require excellent verbal and written communication skills.

Manager Computer Operations

● 5 years experience in operations supervision including budgeting, planning, data communications and configurations management

● Requires mainframe experience, IBM 4381 & MVS/XA background preferred

● Reports to Director of Information Systems

Clinical User Support

● Strong experience working with Medical "group practice" computer applications including billing, A/R, patient registration/scheduling and 3rd party claims management; CyCare software background preferred

● Demonstrated skills in analysis and planning; interaction with users, programmers and vendors; and user training

Computer Operators

● 2 years operating experience working on one of the following systems: IBM 4381 MVS/XA, System 38 or Data General 10000

Sharp offers an attractive compensation and benefits package including 17 days of paid leave per year and an excellent working environment in the geographic center of beautiful San Diego. For immediate consideration, forward your resume to Human Resources Employment, 7901 Frost Street, San Diego, CA. 92123. (619) 541-3222. EOE

SHARP HEALTHCARE

SUPRA Database Administrator

Somerville Lumber is a successful and rapidly growing home center chain in the New England area.

We are developing and modifying major merchandising and warehousing systems on an IBM 4381-MVS/XA using Cincom's SUPRA database. We are looking for a highly motivated individual with database or programming experience in SUPRA/TIS/TOTAL environments to be our Database Administrator. Experience with MANTIS for online program development is also desirable.

Exceptional benefits include medical, dental, profit-sharing, pension and much more. Send resume to: **Somerville Lumber and Supply Co., Inc., P.O. Box 9002, Waltham, MA 02254-9002, Attn: David Rothenberg.**

SOMERVILLE LUMBER

GREATER BOSTON AREA
PROJECT MGR.-RETAIL

Nat'l. retail chain with 250+ stores seeks proj. mgr. to lead apps. devel. team. Must have 5+ yrs. large-scale IBM COBOL DBMS retail sys. exp. Oppty. to join growing co. doing record sales & profits. Loc. in SUBURBS. Salary $50,000. Call the Data Processing Division (in confidence), **ROBERT HALF OF BOSTON, INC.,** 100 Summer Street, Boston, MA 02110. Tel. 617-423-1200. Personnel Consultants. Client company assumes all fees.

data processing

SENIOR INFORMATION CENTER ANALYST
4GL in VM Environment

If your specialty is developing Decision Support Systems in a VM environment with an emphasis on fourth generation languages, Miller Brewing Company can bring out the best in you. Our large scale Information Center is a sophisticated, results-oriented environment charged with supporting one of America's largest and most progressive brewers.

You will have project leadership responsibilities in planning and conducting feasibility studies, and in systems analysis, design and development. You will also have key user training and support responsibilities.

A minimum of 2 plus years decision support system development experience in a VM environment is preferred. Knowledge of QMF with SQL/DS, FOCUS, SAS or DB2 desirable, with two or more years MVS/TSO experience. Superior organizational, problem solving, project management and technical training abilities are necessary. BSCS or equivalent preferred.

Miller Brewing Company is a subsidiary of the Fortune 50 Philip Morris Companies Incorporated. We offer competitive salary, complete benefits, and relocation assistance to the attractive, comfortable Milwaukee area. Send resume or letter to: Corporate Recruitment Manager, Dept. #1000-88, MILLER BREWING COMPANY, 3939 W. Highland Blvd., Milwaukee, WI 53201.

Employing and Promoting Equally Today and Tomorrow

MILLER BREWING COMPANY

SYSTEM PROGRAMMER

Our company is the fastest growing national check printer in the industry. As a result of this growth, the data processing department is seeking an MVS system programmer for our corporate office in San Antonio. This position will be involved in the technical support of data processing for the entire company.

The ideal candidate will have 3-5 years MVS and JES2 experience and be accustomed to a high volume on-line environment. Exposure to the following products preferred; ADR, DATACOM/DB, CICS and UCCEL. System tuning experience a plus.

This position offers a competitive salary as well as a comprehensive benefits package that includes medical/dental/life insurance, vacation, holidays and profit sharing.

If interested in this challenging position, please send resume with salary history to:

CW-B5013
Computerworld
P.O. Box 9171
Framingham, MA 01701-9171

"YOU CAN'T DO THAT"

Build a large scale mainframe computer that will out perform the competition's leading model?

"IMPOSSIBLE!" they said.

But Amdahl did it back in the early 1970's. And today we are a leader in the development, manufacturing, marketing and support of general purpose and scientific computer systems, storage products, communications systems and software.

In less than two decades we have grown from 5 to more than 7,500 "can do" employees around the globe. Our success is a result of teamwork, innovation and commitment to achieving the impossible. If you are ready for challenge, creativity and growth, explore your opportunities with Amdahl in one of the following areas:

SYSTEMS SOFTWARE

YOU CAN "make" the kernel in 3 minutes! Use your 3+ years' development experience in UNIX* and/or 370 operating systems to join our UTS** development team as a manager or individual contributor in one of the following areas:

- **UNIX Internals**
- **Secured Systems**
- **Network Management Architecture**
- **4705/X.25 Support**
- **Performance Measurement Tools**
- **Online Transaction Processing**

Contact Bill McCarthy at (800) 538-8460, extension 8843 or send your resume.

DESIGN AUTOMATION

YOU CAN develop strategic automated tools which take our mainframe designs from concept and verification through to manufacturing. Extensive design automation experience, including C/UNIX based technical skills and/or project management expertise, is essential for the following challenges:

- **Manager, Physical Design Automation Development**
- **Senior Systems Programmers**
- **Systems Design Engineers**
- **Manager, Design Automation**
- **Product Manager, Processor Products Support**

Contact Ranell Durgan at (800) 538-8460, extension 6216 or send your resume.

PRODUCT TECHNOLOGY

YOU CAN make significant contributions to the design of our custom test systems by utilizing your 5+ years of system logic design or your 3+ years of software design development experience with high level languages.

- **Software Engineer (UNIX & "C" required)**
- **Hardware Engineer (ECL a plus)**

Contact Ranell Durgan at (800) 538-8460, extension 6216 or send your resume.

HARDWARE DESIGN

YOU CAN use your 3+ years mainframe experience, with emphasis on channel subsystems development, to guide the evolution of future processors. Previous work with 370 compatible channels, channel algorithm design, and/or microcode desirable.

- **I/O Design Engineer**
- **CPU Design Engineer**

Contact Judy Goodson at (800) 538-8460, extension 7689 or send your resume.

OPERATING SYSTEMS DEVELOPMENT

YOU CAN play a vital role in creating leading-edge systems software which interacts closely with our hardware at the kernel level. Technical excellence and/or management experience in 370/Assembler systems software development is essential. Use your background in 370/XA architecture and MVS or VM internals to pursue these opportunities:

- **Manager, Macrocode Development**
- **Systems Programmers, Processor Simulation**
- **Senior Systems Programmer, Macrocode Development**
- **Manager, Operating System**

Contact Susan Raskin at (800) 538-8460, extension 6191 or send your resume.

SOFTWARE QUALITY ASSURANCE

YOU CAN enjoy variety, gain technical breadth, and have a direct influence on our products by designing and executing mainframe software test procedures. Your background should include large-scale systems integration and test experience. 370/XA Assembler is also highly desirable for the following:

- **Manager, Test Tools Development**
- **Systems Programmers, Software Validation**

Contact Susan Raskin at (800) 538-8460, extension 6191 or send your resume.

YOU CAN join in the excitement of creating the computer systems of the future, while you enjoy the benefits and competitive salary you would expect from an industry leader.

YOU CAN send your resume to: Amdahl Corporation, Employment Department, Department 2-3, P.O. Box 3470, M/S 300, Sunnyvale, California 94088-3470. Principals only, please.

Amdahl Corporation is proud to be an equal opportunity employer through affirmative action.

* UNIX is a registered trademark of AT&T
**UTS is a trademark of Amdahl Corporation

YOU CAN AT amdahl

Computer Professionals: Some bosses do not have endearing qualities.

Some bosses are dictatorially bossy most of the time. If you're faced with that problem...chances are you don't smile very often. Considering that you'll spend about one-third of your life working...being happy is better than being miserable.

Certainly you're in the right field to change things for the better. Computer professionals are always in great demand. We have a substantial list of career opportunities that are second to none...some of them guaranteed to bring a smile to your face. What is more, our career consultants can provide you with skilled, professional representation that adds up to nothing but advantages for you.

Come in. Call. Or mail your resume to the NCA firm nearest to you. No charge for any of our excellent services. Confidentiality is assured. Now is the time to send your boss back to his bunker.

National Computer Associates

ATLANTA: DataPro Personnel Consultants 1900 Perimeter Centre, Suite 600 Atlanta, GA 30346 (404) 392-4242

BALTIMORE: CIPS Inc. 1107 Kenilworth Drive, Suite 206 Towson, MD 21204 (301) 296-9420

BOSTON: Robert Eleven & Co., Inc. P.O. Box 626 Lexington, MA 02173 (617) 861-1620

CHICAGO: Thomas Hintz & Associates 190 North Wacker Drive, Suite 1700 Chicago, IL 60606 (312) 977-1555

CINCINNATI: Task Group 7875 Hosbrook Road Cincinnati, OH 45237 (513) 821-8275

CLEVELAND: Innovative Resources, Inc. Statler Office Tower, Suite 426 East 12th & Euclid Cleveland, OH 44115 (216) 621-4226

COLUMBUS: Michael Thomas, Inc. 400 W. Wilson Bridge Road, Suite 340 Worthington, OH 43085 (614) 846-0605

DALLAS: DataPro Personnel Consultants, Inc. 13355 Noel Road, Suite 2001 Dallas, TX 75240 (214) 661-8800

DENVER: Alliance Consultants, Inc. 7711 South Harrison Street, Suite 4p4 Denver, CO 80210 (303) 759-5064

DETROIT: Electronic Systems Personnel 30600 Town Center, Suite 2560 Southfield, MI 48075 (313) 553-5150

HOUSTON: DataMasters P.O. Box 14548 Greensboro, NC 27415-4548 (919) 373-1461

INDIANAPOLIS: Compass Incorporated 300 Asylum Avenue Hartford, CT 06105 (203) 549-4240

LOS ANGELES: Career Consultants, Inc. 1080 Post Oak Boulevard, Suite 1050 Houston, TX 77056 (713) 626-4160

MINNEAPOLIS: The Consulting Forum, Inc. P.O. Box 68818 Minneapolis, MN 55368 (317) 846-6630

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NEW JERSEY: Systems Search 99 Millburn Avenue, P.O. Box 751 Millburn, NJ 07041 (201) 761-4400

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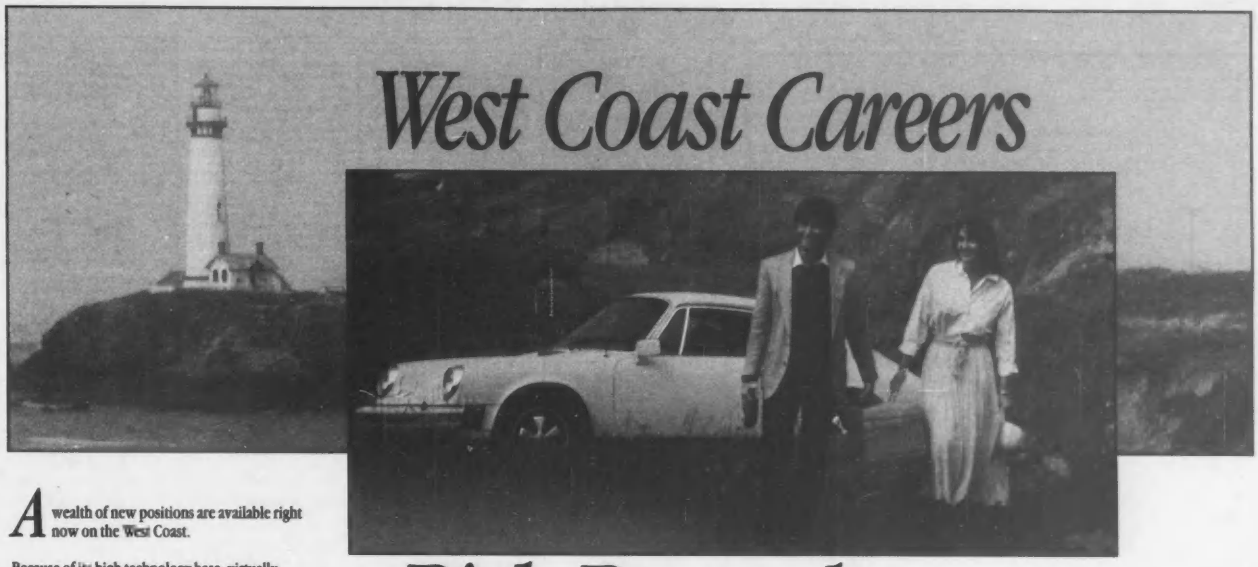

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This challenging position requires an individual with 4-6 years of VAX/VMS experience to develop specifications for programs and system enhancements. In addition, the individual will write, test, implement, and document new programs. This individual will work closely with user departments and should possess good communication skills. Experience in the development of an on-line system preferred. A strong working knowledge of COBOL is required; knowledge of INFORM and/or Application Factory is a plus.

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SYSTEMS IMPLEMENTATION CONSULTANT

Mass Executive Office of Environmental Affairs seeks Systems Analyst to assist in selection of hardware and software for distributed data processing network delivering RDBMS, GIS, and OA capabilities to 400 end users. Applicants must have experience with Scientific/Engineering Mini and Mainframe systems, relational data base management systems, communication networks and competitive procurements. Technical knowledge of a wide variety of hardware systems and their capacity to run desired application software while meeting performance criteria a must. Compensation $60,000 to $75,000 for 1 year appointment with potential for permanent position. Send resume to:

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COMPUTERANIMATION/VIDEO PRODUCTION: College of Design, Architecture, Art and Planning, University of Cincinnati. Tenure track full-time Assistant Professor to provide instruction in Fine Arts applications of computer animation and video production, to advise and provide support for film/video, computer animation area, and function as liaison between School of Art faculty and DAAP Computer Graphics Center. Expected to teach approximately 18 content hours per week of introduction and/or advanced instruction, provide service as necessary to University and community and to continue pursuit of their professional/creative interests. M.F.A. or equivalent in a relevant field of study and demonstration of continuing professional involvement in computer animation and video production as a fine artist required. Experience in 16mm film production desirable. Submit examples of 3/4" and/or 1/2" video cassette(s) and 16 mm film work if available, resume, three references and a post paid returnable container by February 22, 1988 to: Director, School of Art, DAAP College, University of Cincinnati, Cincinnati, OH 45221-0016. An Equal Opportunity/Affirmative Action Employer.

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Responsible for the design, implementation & testing of electronic CAE software. Design & implement core simulator for logic simulation, min-max simulation & timing verification. Design & implement algorithms for concurrent fault simulation, fault coverage analysis & testability analysis. Implement netlist, fuse map, tester & hardware description language interfaces to simulator. Duties performed on UNIX & VMS operating systems in C, PASCAL & or PL/1 programming languages. Master degree in computer science. At least 1 year experience with CAD/CAE workstations, CAE software development, VLSI logic & circuit simulation & extraction from schematic database & continuity verification. PASCAL C, VMS/UNIX & graphic programming is required. The 1 yr experience shall include application of software use for design rule checks, electrical rule checks & layout parameters.. 8 to 5; $35,000/yr. Resume: 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref: #1388. Employer Paid Ad.

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40 Hours per week
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PROGRAMMER/SYSTEMS ANALYST-NYC: Analyze business procedures, eval data processing needs/studies; plan systs based on analysis of research info; research/select approp hardwr/softwr pkgs, modify softwr pkgs, write add'l programs; prep syst/user documentation, train staff to use syst. Devlp/program systs for Kaypro II in BASIC. Design, devlp/implement order entry syst linking directly w/major retailer. Softwr programmed for IBM micro comptr in PASCAL. Knowledge of BASIC & PASCAL programming languages req'd. 40 hrs/wk., 9-5, $34,500/yr. Reqs: BA in Computer Science & 3 yrs exp in job offered or 3 yrs exp in business mgmt for import/export company. Send resume in duplicate to: RVB #119, Rm 501, 1 Main St, Bklyn, NY 11201.

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Positions require a strong UNIX background (UNIX V internals preferred) and demonstrated experience within a UNIX environment in product support, porting, or development in at least one of the following areas:

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An opening exists for a manager of a large scale computer animation and visualization film/videotape facility at a major US university. This facility is in the planning stage currently and will grow to have an annual budget in excess of $3M with an operating staff of 10 to 20 people. The responsibilities of this position include the management of personnel (both artistic, technical and film and video staff), the organization and maintenance of the budget, the scheduling of projects and client contact (both scientific and technical). The annual salary is $69,000.

REQUIREMENTS:

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- Five years of direct management experience of live action and/or computer animation/special effects in television production.
- Two years experience in management, at the producer or executive producer level, of a computer animation facility. Responsibilities should include the direct management of ten or more employees and an operating budget in excess of $3M.
- Experience in project analysis, planning and scheduling of scientific, technical, industrial and theatrical productions, and contract negotiation.

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MARKETPLACE

IBM: Smoke and fire

PC XT prices fall as new units enter market; AT demand, prices strong

BY ELIZABETH LOZANO
BOSTON COMPUTER EXCHANGE CORP.

IBM Personal Computer XT models took a dramatic price tumble in the week ended Jan. 22 as the release of more new units into the marketplace pushed prices lower.

The PC XT Model 086 closed down, at $1,325, while the XT Model 089 fell to $1,675. The Model 089 remains a hot commodity, fueling the strength of DOS. DOS is taking on a new meaning — as an acronym for "Dies Only Slowly."

While the Model 089 was on fire, the PC AT Model 339 was smoking. The Model 339 experienced an increase in demand as large volume vaporware supply stimulated resellers and users alike. On Jan. 22, the Model 339 was trading at $3,625.

In other IBM news, the PC Convertible, which has been the focus of laptop rumors for several months, is currently creating an exporters' panic.

The PC Convertible has not been a strong seller in either the primary or the secondary market. Any new Intel Corp. 80286 and 80386-based laptops from IBM are going to have to be more impressive than the "Portable Peanut." In addition, IBM is going to need a foothold in the laptop market, if it is truly going to be in touch with tomorrow.

Compaq smoulders

Compaq Computer Corp. trading was smoldering this week in comparison to IBM's fire. The Portable I closed up marginally, at $725, representing one of the least expensive ways to get a portable. The Portable II, in contrast, closed down, at $1,700, as power portable users upgrade to smaller and faster models. The Portable III closed up, at $2,675, in the face of tight supply conditions and steady demand.

Deskpro 286 sales were strong throughout the week of Jan. 18. The Deskpro 286, which features 640K-byte random-access memory, an amber monitor and a 20M-byte hard drive, closed up $25, at $2,200.

Deskpro 386 demand continues to rule the 386 DOS world. The Deskpro 386 closed even at $4,375, with single-unit transactions flavoring trading.

Apple: Alive and well

Apple Computer, Inc. trading was heavy this week, as users and resellers shared their excitement about the long overdue formal alliance between Apple and Digital Equipment Corp.

"The complete acceptance of the Macintosh into the corporate world is just around the corner," one reseller remarked. Another said, "This should make a booming market in both Apple and DEC gear."

Apple's 512E closed down, at $975, experiencing a decrease in single unit demand. The Mac Plus closed even at $1,300, struggling to maintain its value in the face of diminishing demand. The phones continue to ring off the hook for Mac II and Mac SE units. Supply is tight for used models, and new street prices for the Mac II and the Mac SE are competitive.

The Boston Computer Exchange can be reached at 800-BOCOEXX, or 617-542-4414 in Massachusetts.

The BoCoEx Index

Closing prices report for the week ending Jan. 22, 1988

IBM PC Model 076	$750	$900	$350
XT Model 086	$1,325	$1,425	$800
XT Model 089	$1,675	$1,900	$1,000
AT Model 099	$2,300	$2,900	$1,950
AT Model 339	$3,625	$3,700	$2,400
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Macintosh 512	$850	$875	$650
512E	$975	$1,100	$800
Plus	$1,300	$1,375	$950
SE	$1,925	$2,150	$1,700
II	$4,050	$4,200	$3,500

INFORMATION PROVIDED BY THE BOSTON COMPUTER EXCHANGE CORP.

Withdrawal of upgrades spurs 4381 price drops

BY SUSAN GANNON
INTERNATIONAL DATA CORP.

On Dec. 15, IBM withdrew upgrades from the 4381 Models 1, 2 and 3 to the Models 11, 12, 13 and 14. It was these attractively priced upgrades that falsely held up values on the original 4381s.

Used market prices have fallen to reflect the withdrawal of the upgrades of the Model 11, 12, 13 and 14 machines. The 4381 M1 was trading for $163,000 (44% of list price) at the end of October and has fallen to $138,000. Retail values for a 4381 P2 in October were 34% of list price, or $190,000, and are now 28%, or $154,765. A 4381 P3 is currently available for 33% of list price, or $276,616.

Last month, IBM announced that volume shipments of 4381 Model Groups would be available immediately and said 4381 Models 23 and 24 will ship in March.

International Data Corp. has heard that some users participated in an incentive program whereby they took an interim Model 11, 12, 13 or 14 machine with the understanding that they would receive an upgrade to a Model 21, 22, 23 or 24 in the fourth quarter. If this is true, IBM must realize that its customers will be wary of similar programs in the future.

For more information, call IDC's Terri LeBlanc at (617) 872-8200.

IBM mainframes — 4381s

Current fair retail market value

	Date shipped	MIPS*	List price	Percent of market value
4381 M1	2Q 1984	2.1	$373,131	37
4381 P2	4Q 1983	2.8	$552,731	28
4381 P3	2Q 1985	4.7	$838,231	33
4381 P13	April 1986	3.7	$447,731	58

* Millions of instructions per second

INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.
CW CHART

Many factors lead to fall of 3083

BY SANDRA IAFOLLA
INTERNATIONAL DATA CORP.

The IBM 3081, 3083 and 3084 market is on the decline, with values falling off 20% or more from year-end 1987 prices.

This drop can be attributed to a combination of factors, including an increasing supply of these machines as a result of lease expirations and IBM's 3090 sales push, a diminishing demand as MIS managers stall hardware acquisitions while they wait for the 3090 F series announcement and the increasing supply of used 3090 machines with which lessors must contend.

The value for the 3083 Model E now lies primarily in memory and channels. Used prices for the Model E have dropped to less than $100,000. The larger uniprocessor 3083 Model J continues to hold fairly steady, having dropped approximately $80,000 since last November. Dollar value differences between the 3083 Model JX and 3083 Model J — as well as other 3083 models — are approximately $25,000.

IBM 3081 Model K and 3084 Model Q machines are readily available, with a substantial number of leases set to expire in the second quarter of this year.

These lease expirations, in conjunction with yet another 3090 announcement, will put increasing downward pressure on used 3081, 3083 and 3084 values this year. It is expected that the 3090 hardware and software enhancements will finally offer a meaningful differentiation between the 3090 and the 3081, 3083 and 3084 families.

In the meantime, IBM is doing a tremendous job of controlling the 3090 market. Aggressive on-site test allowances, deferred payments, extended warranties, increased Volume Procurement Amendment credits and reduced software and engineering support have all been reported.

The end result of IBM's sales effort is that a number of 3090 machines are available on the secondary market. It is not uncommon to have some machine availability at this point, but the supply of some machines is greater than normal.

The market value of a Model 200 is determined by the list price of the newer Model 200E, accounting for the basic differentiating features between the two machines. Sales incentives put the retail and wholesale used prices for the Model 200 at approximately 73% and 70%, respectively.

The price of 3090 models other than the E models will once again have to drop to compete against the new F machines, which offer improved price/performance, and the 3090 Model E boxes, which will be more readily available on the secondary market this year.

For more information, call IDC's Terri LeBlanc at (617) 872-8200.

IBM mainframes — 30 series

Current fair retail market value

	Date shipped	MIPS*	List price	Percent of market value
3083 Model J	1Q 1983	7.5	$2,625,731	12
3081 Model K	2Q 1982	13.5	$3,940,731	13
3084 Model Q	4Q 1983	24.3	$6,091,462	18
3090 Model 200	August 1985	27.2	$4,584,900	73

* Millions of instructions per second

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Training

On-site training touted as cost cutter

BY NANCY BLUMENSTALK MINGUS
SPECIAL TO CW

Although the type of technical training provided by MIS organizations varies depending on the firm's needs, many managers find on-site programs more cost-effective than programs conducted by contractors at outside locations.

"For programmers, we find that the combination of courses from Deltak and a supplemental reading list that we developed is a more economical way to provide training than sending them out to school," says Ed Culliton, manager of information systems at Acme Electric Corp. in Cuba, N.Y.

The cost of a seminar and travel expenses are often too high for managers to justify sending the bulk of their staff members for technical training. For example, mainframe-based training provided by an independent contractor on-site can cost about $4,000 for a class of 10 to 12 people. The same type of course held off-site by a vendor costs about $1,500 per person for one week of training.

Despite the economic issues, some professionals prefer off-site courses. "We have people who think that we are doing them a disservice by not sending them away for training, but there are pros and cons to that," Culliton says.

Electronic training

Many organizations contract with vendors such as ASI/Deltak in Naperville, Ill., and use video and computer-based training (CBT) courses largely as introductory material.

Video and CBT courses are also used to teach operating system concepts, especially in organizations that are going through conversions. Some training vendors offer special one-year IBM MVS conversion video and CBT training packages.

These courses permit companies to provide access to conceptual material without signing a long-term contract with a vendor.

For example, Moog, Inc., an East Aurora, N.Y.-based aerospace company, uses leased CBT courses for end-user conversion training. The company recently implemented a CBT program to train more than 200 IBM VM users on how to use MVS.

"We didn't have anyone available in-house who was qualified to do the training," says Joe Brem, information center supervisor. "Because we had a large number of people to train, classroom training was too burdensome and too expensive. Logistically, it was easier for people to do it on their own," he adds.

Shelfware

Off-the-shelf training packages don't work in all cases. "In the personal computer environment, if people are not partially familiar with computers, they get confused by [video] programs from vendors," Culliton says.

Acme's documentation specialist is currently teaching PC courses on a part-time basis.

Some managers go a step further, designing their own training programs to more closely address their individual needs. However, others are able to implement customized courses with the help of a vendor.

"Ninety percent of our training is done through contract," says Bob Hofstader, manager of education development at Exxon Corp. in New York. "We have a senior computer education administrator who works with external contractors to design a program which is specifically geared towards our learning objectives."

Blumenstalk Mingus is a free-lance writer based in Buffalo, N.Y.

February 15 COMPUTERWORLD
Training Section

What percentage of the MIS budget is allocated for training? How do managers justify training expenditures?

Turn to the Training section of COMPUTERWORLD's February 1 issue for an interesting editorial feature addressing this and other questions. Call for more information.

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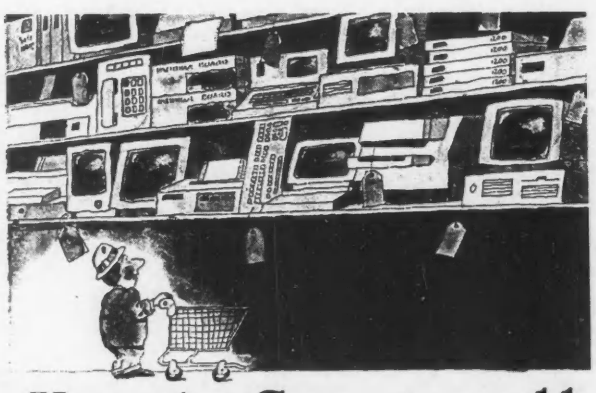

Upcoming Computerworld Spotlight Sections

Issue Date	Topic	Ad Closing Date
Feb. 29	Performance Management/ Capacity Planning	Feb. 12
March 14	DBMS	Feb. 26
March 28	Micro-to-Host-Links	March 11
April 11	PCs (IBM-Compatible) Portables/Laptops	March 28
April 25	TBA	April 8
May 9	Printers	April 22
May 23	Data Communications	May 6
June 6	CASE	May 20
June 20	The SNA Market	June 3
July 11	Disaster Prevention & Recovery Products & Services	June 24
July 25	Productivity Software	July 8

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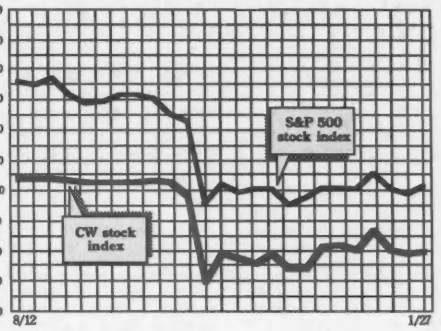
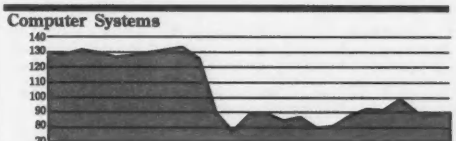


Indexes	*Last Week*	*This Week*
Communications	84.2	**86.4**
Computer Systems	87.9	**89.1**
Software & DP Services	91.6	**92.3**
Semiconductors	54.3	**55.1**
Peripherals & Subsystems	80.8	**81.6**
Leasing Companies	100.8	**102.1**
Composite Index	78.8	**79.9**
S&P 500 Index	98.9	**101.7**

Communications

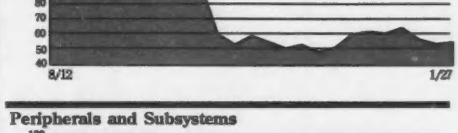
Computer Systems



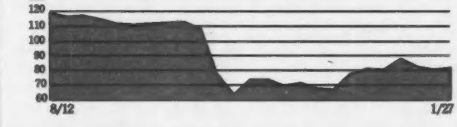
Software and DP Services

Semiconductors

Peripherals and Subsystems



Leasing Companies



CW CHARTS: AMY J. SWANSON

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, JANUARY 27, 1988

EXCH		PRICE 52-WEEK RANGE (1)		CLOSE JAN. 27 1988	WEEK NET CHNGE	WEEK PCT CHNGE
Communications and Network Services						
N	AMERICAN INFO TECHS CORP	100	74	92	6.3	7.3
Q	ANDREW CORP	19	11	13	0.1	1.0
Q	ARTEL COMM CORP	5	2	2	-0.3	-13.3
N	AT&T	36	20	29	0.9	3.1
Q	AVANT GARDE COMP INC	6	2	2	-0.1	-5.9
Q	AVANTEK INC	19	6	7	0.1	1.9
N	AYDIN CORP	38	16	20	1.0	5.2
N	BELL ATLANTIC CORP	80	61	70	4.3	6.5
N	BELLSOUTH CORP	44	29	40	2.4	6.4
Q	COMPRESSION LABS INC	8	2	4	0.8	23.1
O	COMPUTER NETWORK TECH	6	2	2	-0.1	-3.1
Q	COMSAT CORP	40	25	33	1.8	5.2
Q	DATA SWITCH CORP	9	4	6	0.3	4.2
Q	DIGITAL COMM ASSOC	49	20	26	-1.0	-3.7
Q	DYNATECH CORP	44	14	18	-0.8	-3.9
Q	FIBRONICS INTERNATIONAL INC	11	2	3	0.0	0.0
Q	GANDALF TECHNOLOGIES	11	5	6	-0.1	-2.1
Q	GENERAL DATACOMM INDS	14	3	4	-0.3	-6.1
N	GTE CORP	45	29	37	1.3	3.5
Q	INFOTRON SYS CORP	12	5	7	0.8	11.5
N	ITT CORP	66	42	45	-0.9	-1.9
N	M A COM INC	16	7	10	0.3	2.6
Q	MCI COMMUNICATIONS CORP	12	5	11	0.3	2.4
Q	MICOM SYS INC	18	7	11	1.4	14.3
Q	NETWORK SYS CORP	19	7	7	0.0	0.0
N	NORTHERN TELECOM LTD	24	14	18	0.1	0.7
Q	NOVELL INC	30	12	23	1.5	7.1
N	NYNEX CORP	78	58	68	2.6	4.0
N	PACIFIC TELESIS GROUP	34	9	28	1.8	6.6
N	PARADYNE CORP	9	4	4	0.0	0.0
A	PENRIL CORP	6	1	3	-0.3	-7.1
N	PLESSEY PLC	41	23	26	-2.1	-7.5
N	SCIENTIFIC ATLANTA INC	20	8	12	0.5	4.3
N	SOUTHWESTERN BELL CORP	46	22	37	1.5	4.3
Q	3 COM CORP	26	12	19	0.4	2.0
N	TIMEPLEX INC	41	17	32	1.5	4.9
Q	UNGERMANN BASS INC	16	5	8	1.0	14.0
N	U S WEST INC	60	43	53	3.1	6.3
Computer Systems						
Q	ALLIANT COMPUTER SYS	37	5	7	-0.3	-3.3
Q	ALPHA MICROSYSTEMS	6	3	4	0.0	0.0
Q	ALTOS COMPUTER SYS	17	9	11	-0.1	-1.2
A	AMDAHL CORP	50	19	30	0.8	2.5
Q	APOLLO COMPUTER INC	25	9	14	2.1	18.7
Q	APPLE COMPUTER INC	60	26	40	0.0	0.0
N	BOLT BERANEK & NEWMAN	30	12	15	-1.3	-7.7
Q	BRITTON LEE INC	5	1	2	0.0	0.0
N	COMPAQ COMPUTER CORP	79	23	46	0.9	1.9
Q	COMPUTER AUTOMATION INC	17	5	11	0.3	2.4
A	COMPUTER CONSOLES INC	12	2	5	0.3	5.1
Q	CONCURRENT COMP CORP	24	11	16	-0.4	-2.3
N	CONTROL DATA CORP DEL	38	18	21	0.8	3.7
Q	CONVERGENT TECH	12	3	3	-0.1	-3.8
Q	CONVEX COMPUTER CORP	22	6	8	0.3	3.2
N	CRAY RESH INC	136	47	67	1.8	2.7
Q	DAISY SYS CORP	13	5	7	0.5	7.4
N	DATA GEN CORP	39	16	26	2.3	9.6
N	DATAPOINT CORP	9	3	5	0.3	5.9
N	DIGITAL EQUIP CORP	200	110	123	7.5	6.5
N	FLOATING POINT SYS INC	17	3	4	0.0	0.0
N	GOULD INC	34	8	11	-1.8	-14.0
N	HARRIS CORP	43	22	27	0.8	2.9
N	HEWLETT PACKARD CO	74	36	55	2.8	5.3
N	HONEYWELL INC	91	49	59	1.8	3.1
N	IBM	176	102	113	2.4	2.2
Q	INFORMATION INTL INC	17	9	11	0.0	0.0
Q	IPL SYS INC	3	2	2	0.0	0.0
Q	MASS COMPUTER CORP	14	5	5	0.0	0.0
N	MATSUSHITA ELEC INDL LTD	198	93	174	-3.1	-1.8
Q	MEGADATA CORP	7	3	3	-0.1	-1.8
Q	MENTOR GRAPHICS CORP	39	14	20	0.0	0.0
N	NBI INC	14	4	4	0.3	6.9
N	NCR CORP	87	50	55	0.9	1.6
N	PRIME COMPUTER INC	31	12	16	1.4	9.5
Q	PYRAMID TECHNOLOGY	12	5	8	-0.3	-2.9
Q	STRATUS COMPUTER	41	15	21	0.8	3.7
Q	SUN MICROSYSTEM INC	45	14	32	-1.3	-3.8
Q	SYMBOLICS INC	6	1	2	-0.1	-3.8
N	TANDEM COMPUTERS INC	38	17	18	-1.3	-6.6
N	TANDY CORP	57	28	33	-0.3	-0.7
N	ULTIMATE CORP	37	16	16	0.0	0.0
N	UNISYS CORP	48	24	33	2.4	7.7
A	WANG LABS INC	19	10	14	0.1	0.9
Software & DP Services						
Q	ADVANCED COMP TECH	6	1	2	0.3	15.4
N	AGS COMPUTERS INC	30	11	14	-1.0	-6.5
Q	AMERICAN MGMT SYS INC	20	9	15	1.6	12.4
Q	AMERICAN SOFTWARE INC	22	6	10	0.3	2.6
N	ANACOMP INC	11	4	7	0.3	3.8
Q	ANALYSTS INTL CORP	10	4	8	0.3	3.4
Q	ASHTON TATE	33	13	24	0.5	2.2
Q	ASK COMPUTER SYS INC	17	6	10	2.3	30.0
Q	AUTODESK INC	34	12	18	1.5	9.0
N	AUTO DATA PROCESSING	55	16	42	1.8	4.4
Q	BOOLE & BABBAGE INC	12	5	7	-0.8	-9.4
N	COMPUTER ASSOC INTL INC	37	15	28	0.5	1.8
Q	COMPUTER HORIZONS CORP	15	7	10	-0.3	-2.5
N	COMPUTER SCIENCES CORP	73	42	46	-0.3	-0.5
N	COMPUTER TASK GROUP INC	18	9	10	-0.3	-2.4
Q	COMSHARE INC	28	12	15	-0.3	-1.6
N	CULLINET SOFTWARE INC	14	4	6	-0.1	-2.1
Q	CYCARE SYS INC	10	6	7	0.5	7.4
Q	DUQUESNE SYS INC	33	10	20	0.8	3.9
A	DATA ARCHITECTS INC.	17	7	9	0.0	0.0
N	GENERAL MTRS (CLS E)	51	30	38	2.3	6.3
Q	HOGAN SYS INC	17	5	5	-0.1	-2.6
Q	INFORMIX CORP	31	11	21	1.4	7.1
Q	INTELLICORP INC	11	2	3	0.0	0.0
Q	KEANE INC	10	6	7	0.0	0.0
Q	LOTUS DEV CORP	40	19	26	-0.5	-1.9
Q	MANAGEMENT SCI AMER	21	6	6	0.0	0.0
Q	MICRO PRO INTL CORP	8	3	3	-0.1	-3.6
Q	MICROSOFT CORP	79	33	56	1.8	3.2
Q	MORINO ASSOCIATES INC	24	7	14	0.3	1.8
Q	NATIONAL DATA CORP	34	19	26	0.3	1.0
Q	ON LINE SOFTWARE INTL INC	22	9	10	-0.9	-8.1
Q	ORACLE SYS CORP	19	6	13	1.5	12.8
N	PANSOPHIC SYS INC	28	11	14	0.9	6.7
Q	POLICY MGMT SYS CORP	30	15	19	-0.5	-2.6
Q	PROGRAMMING & SYS INC	14	7	10	0.3	2.6
Q	REYNOLDS & REYNOLDS CO	39	14	17	0.0	0.0
Q	SCI CORP	18	10	15	-0.3	-1.6
Q	SHARED MED SYS CORP	53	19	25	2.4	10.7
Q	SOFTWARE AG SYSTEMS INC	19	7	8	-0.1	-1.6
Q	SOFTWARE PUBG CORP	17	5	9	0.6	7.1
A	STERLING SOFTWARE INC	14	6	8	1.6	24.5
Q	SUNGARD DATA SYS INC	21	10	14	0.5	3.6
Q	SYSTEMATICS INC	30	19	25	0.0	0.0
N	SYS. SOFT INC.	24	7	13	-0.6	-4.7
Q	VM SOFTWARE INC	45	7	8	0.3	3.3
Semiconductors						
N	ADV MICRO DEVICES INC	25	8	9	0.5	5.6
N	ANALOG DEVICES INC	24	8	12	0.6	5.7
Q	ANALOGIC CORP	13	5	7	0.4	5.5
Q	INTEL CORP	42	18	24	1.5	6.7
Q	LSI LOGIC CORP	17	7	9	0.1	1.4
N	MOTOROLA INC	74	35	41	-0.1	-0.3
N	NATL SEMICONDUCTOR	22	10	10	0.1	1.3
N	TEXAS INSTRS INC	80	36	44	-0.3	-0.6
A	WESTERN DIGITAL CORP	33	12	12	-0.1	-1.0
Peripherals						
Q	ALLOY COMP.	13	4	4	0.1	3.0
N	AM INTL INC	9	3	6	0.3	4.8
Q	AST RESH INC	23	6	9	0.5	5.9
Q	AUTO TROL TECH CORP	9	3	4	0.4	11.5
N	BANCTEC INC	16	5	7	-0.4	-5.3
Q	CIPHER DATA PRODS INC	18	4	7	0.3	3.8
A	COGNITRONICS CORP	5	2	3	0.0	0.0
N	COMPUGRAPHIC CORP	28	19	23	0.8	3.4
N	COMPUTERVISION CORP	23	7	15	0.1	0.8
A	DATAPRODUCTS CORP	24	7	8	0.1	1.6
A	DATARAM CORP	9	5	6	0.3	4.2
N	DECISION INDS CORP	13	4	11	-0.1	-1.2
N	EASTMAN KODAK CO	71	42	43	-5.8	-11.9
Q	E M C CORP MASS	29	10	13	0.3	2.0
Q	EMULEX CORP	9	4	5	-0.5	-8.5
Q	EVANS & SUTHERLAND	40	18	19	-0.3	-1.3
Q	ICOT CORP	13	3	5	0.0	0.0
Q	INTERLEAF INC	24	9	15	-0.5	-3.2
Q	IOMEGA CORP	8	1	2	-0.3	-9.5
Q	LEE DATA CORP	10	3	3	0.3	8.7
Q	MASSTOR SYS CORP	6	1	2	-0.1	-3.1
Q	MAXTOR CORP	34	6	12	2.1	21.8
Q	MICROPOLIS CORP	44	13	19	0.0	0.0
Q	MINISCRIBE CORP	18	5	8	0.1	1.6
N	MINNESOTA MING & MFG CO	84	45	58	1.0	1.8
A	MSI DATA CORP	24	12	21	0.9	4.3
Q	PRIAM CORP	6	1	2	0.3	15.4
Q	PRINTRONIX INC	13	7	8	0.3	3.2
N	QMS INC	27	10	10	0.1	1.3
Q	QUANTUM CORP	35	8	11	0.5	4.7
Q	RAMTEK CORP	6	2	4	-0.4	-8.8
N	RECOGNITION EQUIP INC	27	7	10	0.1	1.3
G	REXON INC	14	5	6	0.1	2.2
Q	SCAN TRON CORP	14	7	11	0.0	0.0
Q	SEAGATE TECHNOLOGY	46	10	16	-0.4	-2.3
N	STORAGE TECH CORP	5	1	2	0.3	14.3
Q	TANDON CORP	7	2	2	0.3	15.4
A	TEC INC	7	3	5	-0.1	-2.3
N	TEKTRONIX INC	43	21	24	0.5	2.2
Q	TELEVIDEO SYS INC	3	1	1	-0.1	-8.7
N	TELEX CORP	102	30	47	-12.0	-20.5
Q	WYSE TECH	40	11	19	-1.0	-5.0
N	XEROX CORP	85	50	57	1.0	1.8
Q	XIDEX CORP	16	6	6	-0.3	-3.8
Leasing Companies						
Q	CAPITAL ASSOCIATES INTERNATIONAL INC	11	4	4	0.4	10.0
N	COMDISCO INC	37	12	19	1.0	5.6
N	CONTINENTAL INFO SYS	14	5	6	-0.5	-7.7
Q	PHOENIX AMERI INC	8	2	3	0.1	4.5
Q	SELECTERM INC	6	3	4	-0.3	-5.9

EXCH: N=NEW YORK; A=AMERICAN; Q=NATIONAL; O=OVER-THE-COUNTER; S=SPLIT

O-T-C PRICES ARE BID PRICES AS OF 3 P.M. OR LAST BID
(1) TO NEAREST DOLLAR

Take five

High-tech stocks catch breath, but Tandem gets gut-punched

A tumultuous Wall Street settled down and computer companies began licking their wounds in action on the New York Stock Exchange last week. Digital Equipment Corp., Apple Computer, Inc., Compaq Computer Corp., Control Data Corp. and Microsoft Corp. all made up some ground lost during recent weeks, as of trading late Friday.

But Tandem Computers, Inc. continued to pay for its announcement early last month that its December quarter's income would not meet expectations. Tandem hit a 52-week low of 17⅜ during trading Tuesday, but rebounded later in the week to reach 19 on Friday afternoon, down ¼ of a point.

Among the week's better performers, DEC was up 2¼ points to 122¼; Control Data jumped 2¼ points to hit 22⅝; Apple was up 1¼ points to 40½; Microsoft rose 1⅜ points to 55¼; and Compaq went up 1½ points to 47. Among more modest gainers, Apollo Computer, Inc. rose ¾ of a point to 13; IBM went up early in the week then tailed off at the end amid rumors that it will cut PC prices and finished off up ⅛ of a point at 111⅜; and Prime Computer, Inc. rose ⅝ of a point to hit 15½.

JAMES DALY

Ashton-Tate takes graphics gauntlet

Package will joust with Lotus's Freelance Plus on the desk top

BY STEPHEN JONES
CW STAFF

SAN FRANCISCO — Ashton-Tate Corp. last week again challenged rival Lotus Development Corp., introducing a desktop presentation package that will go head-to-head with Lotus's popular Freelance Plus.

The $495 desktop presentation package, called Draw Applause, is the first new graphics product from Ashton-Tate's joint venture with Decision Resources, Inc. It comes more than a year after Ashton-Tate acquired the business graphics software developer.

Draw Applause is positioned as a high-end addition to Ashton-Tate's existing Master Graphics series, which was also developed by Decision Resources. While Master Graphics was designed for Intel Corp. 8086-based personal computers, Draw Applause runs on Intel 80286- and 80386-based systems.

The package requires 640K bytes of random-access memory and an IBM Enhanced Graphics Adapter card. Although Draw Applause can be operated from a keyboard or a mouse, one beta-test user said it was "literally designed with a mouse in mind."

The vendor claimed that Draw Applause can exchange files with other PC and mainframe graphics programs that are written in Computer Graphic Metafile code.

Those programs include Freelance Plus, Software Publishing Corp.'s Harvard Graphics and Computer Associates International, Inc.'s mainframe Tell-a-Graph package.

All the goodies

Draw Applause features text editing, color gradations and a library of 125 color images.

"The product hits state-of-the-art status right out of the blocks, which hasn't always happened with Ashton-Tate," said Brian Mutert, a PC software consultant who attended the announcement here.

Users gave the product high marks for its easy-to-use interface. Philip Abrams, executive vice-president of Princeton Venture Research, Inc. in Princeton, N.J., said he was able to get the product up and running even though the initial beta-test version he received came with no documentation.

But Frank West, the developer who wrote most of the program for Decision Resources and Ashton-Tate, said the product's high-end capabilities could be intimidating for first-time users. West is vice-president of Tigard, Ore.-based Communication Dynamics, Inc., which originally sold the program to Decision Resources.

Ashton-Tate also said it will reduce the price of Presentation Pack, incorporating the Master Graphics series in one package, from $595 to $495.

Facility glitch suspect as CICS/MVS upgrade delayed

BY CHARLES BABCOCK
CW STAFF

RYE BROOK, N.Y. — IBM said last week that delivery of Version 2.1 of CICS/MVS, formerly scheduled for the fourth quarter of 1987, has been deferred indefinitely.

CICS customers will have to wait until the second quarter of this year to learn when it is likely to be shipped.

"IBM needs additional time to complete implementation of the requirements on this product," said a spokesman for the IBM Information Systems Group in Rye Brook, N.Y.

Version 2.1 would provide common storage area relief for MVS/XA users by moving the CICS subsystem above the 16M-byte line that limits MVS/SP users. The common storage area is a region of MVS memory devoted to temporary storage of data and transactions until they can be routed through the CPU for processing or along communications lines to users.

"It's not like IBM to defer a major, strategic product, one that participates in Systems Application Architecture," said Robert P. Tasker, director of computing research at The Yankee Group in Boston.

He speculated that IBM has been forced to delay delivery due to the continuing technical challenge of moving CICS into 31-bit mode operation.

Version 2.1 was also supposed to incorporate Extended Recovery Facility (ERF), which would dynamically switch users on a crashing CICS system to a backup system without loss of transactions or data.

"That's biting off a big chunk. I can easily see that as the hold-up," said Tasker, who used CICS as an MIS director.

Version 2.1, however, was supposed to be available in the fourth quarter without ERF features, according to IBM's Feb. 17, 1987, announcement of the upgrade. Tasker also pointed out that IBM's CICS development resources are limited and that the firm has committed itself to providing CICS under VM for the 9370 mid-range processor.

Tasker said IBM faced a choice between disappointing CICS users with a six-month or longer delay or holding back the sales of its 9370s for lack of CICS under VM.

Barry R. Christian of On-Line Documentation, Inc., a Yorba Linda, Calif., firm that produces a CICS remote-screen access product, said IBM must be having problems getting a 31-bit mode version of CICS to work with existing 24-bit CICS applications, disregarding ERF complexities.

Bells' ONA plans ring false to some

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Several regional Bell holding companies last week announced Open Network Architecture (ONA) plans that could provide corporate managers with new flexibility in designing and managing data networks in the 1990s.

Nynex Corp., for example, said it will provide trunkside access to the local exchange office, a diagnostic channel and reconfigurable private networks as tariffed services.

However, network managers expressed disappointment that the Bell companies have refused to offer transport services independent of switching services, according to Henry D. Levine, an attorney for the Committee of Corporate Telecommunications Users and several financial services companies.

"The failure to unbundle transport imposes enormous direct costs on major data networks," Levine said, because it requires users to buy switching services that they do not need from the Bell companies.

Explain yourself

The Federal Communications Commission required AT&T and the Bell holding companies to file by today ONA plans that explain how they will unbundle their telecommunications services and offer the individual "basic service elements" to enhanced service providers — such as electronic mail and data base services — and to end users.

The FCC will accept public comments on the plans through April 8 and is expected to approve the ONA plans this fall. The services would start rolling out one year later at prices set in state tariffs, according to ONA plans reviewed last week.

In essence, ONA is supposed to allow network managers to pick and choose the basic service elements they want from the Bell operating companies. For instance, several users reportedly plan to purchase the Automatic Number Identification feature, which would improve computer security by immediately identifying anyone who dials into a data base.

In many cases, the Bell holding companies simply unbundled the features of their existing Centrex, packet and private-line services. "No one expected substantial technical realignment of the network in these plans. It's too soon," Levine said, noting that more advanced features are expected in the future.

But Levine said there are a few promising services announced in the initial ONA plans, including the trunkside access service to be offered by Nynex.

Charles P. Wehnes, staff director of ONA marketing for Nynex Service Co. in White Plains, N.Y., said several New York banks have expressed interest in the service.

However, users groups said they are upset that the ONA model developed jointly by the Bell holding companies does not separate the basic service elements from the Bell companies' end-to-end services. Under the model, ONA's basic service elements are only options to be added on top of the underlying service, called a basic service arrangement.

Levine charged that the Bell companies' ONA framework is in direct conflict with the FCC's order to unbundle the basic building blocks of the local network.

"Even under the bad scheme, there are some new services that may be very valuable," Levine said. "The problem is that we'll never see the real potential for an unbundled, open network."

Under the FCC rules that established ONA, the Bell companies must provide enhanced service providers and users with equal access to the local exchange network.

DEC ups support for IBM software

BY PATRICIA KEEFE
CW STAFF

WASHINGTON, D.C. — Further extending its reach into the IBM office, Digital Equipment Corp. last week announced support for IBM's Professional Office System (Profs), CMS Notes mail software and VM and DOS/VSE operating systems.

The announcements at the Communication Networks '88 exposition, or Comnet, here last week underscored DEC's recent statement of direction [CW, Jan. 25] supporting open systems and international standards.

Access to the VM and DOS/VSE operating systems was introduced under Decnet/SNA Gateway V1.4.

The turnkey gateway reportedly allows users to exchange information bidirectionally and share resources between DEC systems in a Decnet environment and MVS, VM and DOS/VSE systems in an IBM Systems Network Architecture (SNA) environment.

Functions supported include terminal emulation, file transfer, mail and document exchange and the ability to create distributed application programs that run between DEC and IBM systems. Other features of the Decnet/SNA Gateway include the following:

- Support for IBM's CICS/VS, IMS/VS, MVS/XA, MVS/SP, ACF/VTAM and ACF/NCP systems.
- The ability to monitor status information relative to the Decnet/SNA Gateway and SNA.

Available now, Decnet/SNA Gateway V1.4 costs $16,500.

The electronic mail gateway is the newest component of DEC's Mailbus product family. DEC already provides gateways to other mail systems, including MCI Communications Corp.'s MCI Mail, CCITT X.400 systems and DEC's VAX Message Router/P Gateway Version 1.0 for IBM's Systems Network Architecture Distribution Services and Personal Services/Distributed Office Support System mail users.

Available in March, VAX Message Router/P Gateway V1.0 is VAX/VMS layered software said to support the exchange of messages and revisable and final form documents between IBM's Profs or CMS Notes mail and DEC mail users.

Prices for the Message Router/P Gateway range from $1,500 for the Vaxstation II to $3,000 for a Microvax 2000 to $36,000 for the VAX 8800.

Shake-up

FROM PAGE 1

headquarters here last week. "This structure will create more entrepreneurship, accountability and independence in our five business units."

Industry analysts said they were intrigued by the separation of the 9370 from IBM's other mid-range machine, the System/36. Some characterized the move as IBM's realization that companies purchasing the 9370 come from a mainframe mind-set and are more interested in distributing applications throughout their organizations than in building a so-called mid-range computer.

The move to disperse various product lines in semiautonomous units surprised some MIS executives, who said they are more concerned that IBM reconcile its incompatible products. "For someone like me, there's just too much need to transcend all those different systems," said Bill Eaton, vice-president of information systems at Levi Strauss & Co. "I want to buy a single solution."

Potential confusion

The MIS manager at a large Dallas site agreed. "There's a potential confusion in the mind of the customer," the manager said. "It looks like we're going back to the old days of GSD and DPD [the General Systems and Data Processing Divisions], and there you had two different product lines competing with each other."

Akers said the company felt that with the forthcoming spate of System/36 and 38 announcements — including Silverlake, the long-rumored successor to the System/36 and 38 — the architecture needed its own business unit.

The firm's evolving Systems Application Architecture (SAA) is expected to provide consistent user interfaces, programs and communications links to IBM's three primary architectures. Yet it will take a long time to develop, analysts said, citing the decade of work IBM invested in making its Systems Network Architecture a standard. Akers called that incompatibility "yesterday's problem."

IBM established a new entity, IBM United States, to oversee the five business units. The group is headed by Senior Vice-President Terry R. Lautenbach (see story page 1). Also reporting to Lautenbach is IBM's U.S. Marketing and Services Group, formerly called the Information Systems Group.

In addition, the company elevated Executive Vice-Presidents Kaspar Cassani and Jack Kuehler to the position of vice-chairman of the board and gave both men broad oversight responsibilities.

Cassani, who continues to oversee IBM's World Trade Asia/Pacific Group and World Trade Americas Group, will serve as review executive for IBM's worldwide marketing and services. Kuehler, who headed the Federal Systems Division and was a member of the management committee, will oversee the Enterprise Systems and Technology Products units and will hold overall review responsibility for IBM United States. However, Allen J. Krowe, who was promoted to executive vice-president, was named review executive for the Personal Systems, Application Business Systems and Communication Systems units.

Akers said the reorganization is a continuation of moves made by IBM to streamline its operations and shift personnel from corporate staff positions to marketing, sales, service and engineering posts. IBM, which adheres to a lifetime employment philosophy, has reduced its worldwide work force by 15,000 during the last two years and redeployed more than 20,000 employees, Akers said.

"This is a major decentralization, a major delegation of authority," Akers stressed. "In some cases, we now have several integrated IBM companies instead of one computer and communications company."

IBM watchers and analysts agreed with the intent of the reorganization but said they are not sure a decentralized structure will enable IBM to cut costs and speed product delivery cycles. Decentralization could create more bureaucracy and even add operational costs, some said.

"When was the last time a company decentralized and cut costs and people?" asked Donald Haback, an analyst at The Nikko Securities Co. in New York. "Centralization allows you to let go of people."

Ulric Weil, a 16-year IBM employee and 12-year Big Blue watcher, said the new structure could be a morale builder for the company but might increase IBM's already bloated bureaucracy. "When you go to decentralization, the review executives will need staffs to interact with the different business units," he said. "Before you know it, you have staff, staff, staffs, and costs escalate."

Akers said that because of IBM's size, the impact of the reorganization might not be felt for years to come. "The decisions we make sometimes do not pay off for four, five or eight years."

Analysts speculated that IBM's overseas operations would be the next area to be realigned, since they have remained relatively unaffected by the recent moves.

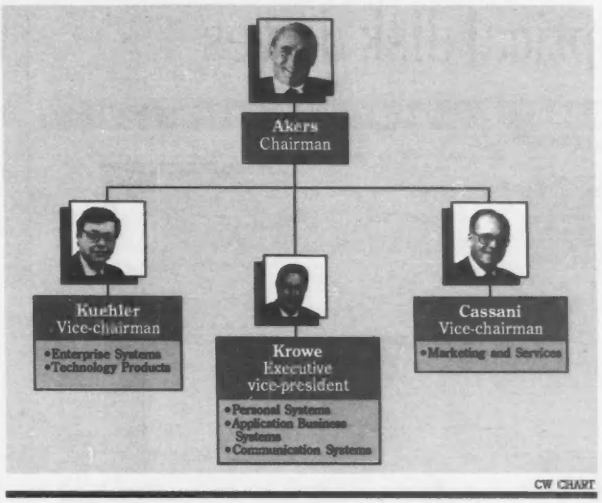
While some analysts speculated that the reorganization positions Lautenbach as a possible successor to Akers, others contended that the situation remains hazy.

Some IBM watchers said they had expected Akers to anoint a successor by naming a president or chief operating officer to share the corporate suite. Vice-Chairmen Kuehler and Cassani are not believed to be in the running because they are 55 and 59, respectively.

Midwest correspondent Jean S. Bozman contributed to this report.

Powers that be

IBM charges three of its top executives with review responsibility for key divisions



CW CHART

Lautenbach

FROM PAGE 1

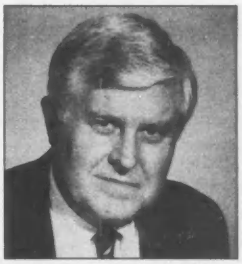
tions, both international and domestic. For the past two years, Lautenbach has devoted his energies to one of IBM's weakest and most critical areas: communications.

"For 15 years, IBM talked about communications, but it wasn't until he took over that they climbed off the IBM soapbox with ISDN, OSI and recognizing that DEC is around," said Bob Djurdjevic, president of Annex Research in Phoenix.

Lautenbach took over the newly formed Communication Products Division (CPD) in November 1985 and one year later became vice-president of the Information Systems and Communications Group, which comprised the CPD and the Entry Systems Division. Perhaps his best credential for executive advancement is the diversity of areas he has managed at the firm.

"When you look at the business lines reporting to him, he has experience across almost all of those product areas," said Frank Dzubeck, president of Communications Network Architects, a consulting firm in Washington, D.C.

A former IBM colleague said Lautenbach has a keen mind for understanding the complexity of IBM's business. "Intellect was one of Terry's greatest assets," said Thomas J. Fraser, a 17-year IBM sales employee who worked for Lautenbach in the Data Processing Division.



Terry R. Lautenbach

Fraser, now president of Computer Equipment Leasing in Port Washington, N.Y., recalled Lautenbach saying intellect was the quality he considered most important for an IBM executive. "And he was one of the better examples of that," Fraser said. "When you think of the number of skills they have to display — understanding the relationship of one technology to another, doing business in 100 different countries — it boggles the mind."

An Ohio native, Lautenbach joined IBM's Cincinnati office in 1959 shortly after graduating with a physics degree from Xavier University in the same city. He climbed the marketing rungs within the Data Processing Division for 17 years and reached the division presidency in 1976.

Two years later, at the age of 40, Lautenbach became president of IBM World Trade Americas/Far East Corp., which earned him a spot on the board of directors. He achieved a vice-president's title in 1980 and became IBM's vice-president of marketing in 1984.

Last week's promotion propelled Lautenbach to the top of the list of potential successors to Akers, according to some analysts. "Lautenbach is now the important line executive, the profit-and-loss guy," said International Data Corp. analyst Jack Hart, a 20-year IBM veteran. "It's that function that has traditionally moved into the president's and then the chief executive's job."

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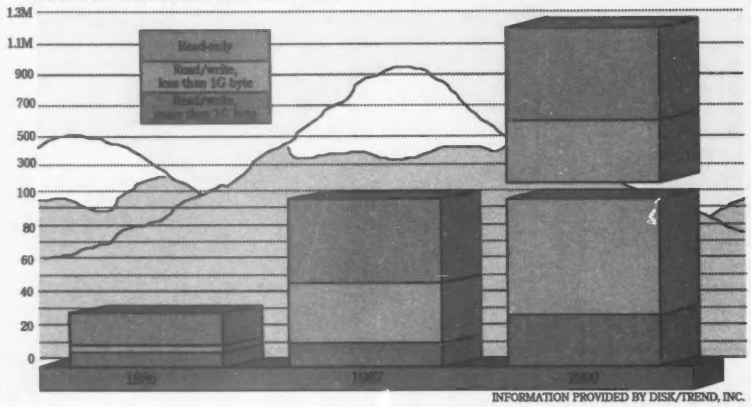
TRENDS

Optical disk drives

The hills are alive with the sound of disk drives

WORLDWIDE SHIPMENTS IN THOUSANDS OF UNITS



INFORMATION PROVIDED BY DISK/TREND, INC.

The promise of optical disks is set to become a reality by 1990, with sales soaring as users invest in erasable disks and migrate on-line applications.

Work by research firms shows a booming optical market. Disk/Trend, Inc., a Mountain View, Calif.-based research firm, and Peripheral Strategies, Inc. in Santa Barbara, Calif., are tracking the growth and the changing image of optical storage.

Disk/Trend said worldwide shipments of optical disk drives climbed from 31,700 in 1986 to 99,600 in 1987 and that they will reach 1.2 million in 1990.

Disk/Trend also forecast that revenue from those shipments will rise from $203 million to $1.4 billion.

While use of optical disks is increasing, there is a shift in the types of optical units in use. The drives most in demand in 1986 were read/write drives that utilized capacities larger than 1G byte.

These drives will continue to be popular. But the boom areas will be read/write disks holding less than 1G byte and read-only disks, both of which are expected to attain dominant positions in 1990.

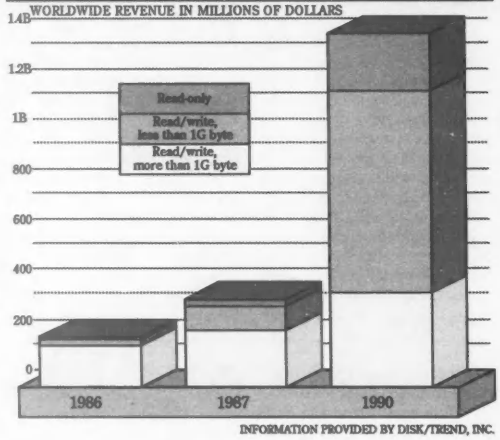
In looking at how erasable disks will be used in 1990, Peripheral Strategies said 55% will be used as fixed magnetic disks are now, for primary mass storage, and that 25% will be used for document storage.

Write-once optical disks are more likely to be used for document and image storage and on-line jukebox-style storage in 1990, Peripheral Strategies added.

JAMES CONNOLLY

Climbing in 1987

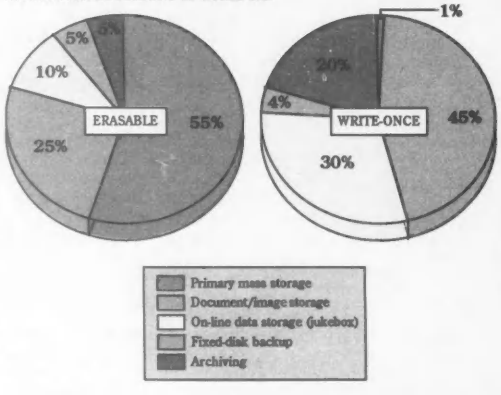
WORLDWIDE REVENUE IN MILLIONS OF DOLLARS



INFORMATION PROVIDED BY DISK/TREND, INC.

Write-once and erasable disk use in 1990

APPLICATION BY PERCENT OF TOTAL USE



INFORMATION PROVIDED BY PERIPHERAL STRATEGIES, INC.
CW CHARTS: AMY J. SWANSON

INSIDE LINES

Branching out. Cullinet plans to release a version of its IDMS data base management system for Unix soon, with initial availability on the Sun Microsystems platform. Cullinet wouldn't specify a delivery date, but a senior official said the DBMS will be "moved to market very quickly."

Reach out and stroke someone. AT&T last week tried to appease a group of Unix vendors that have protested its alliance with Sun Microsystems. "We have met with representatives of companies who requested this meeting, and . . . we reiterated our commitment to maintain Unix System V as an open system," AT&T said. Some of the reps, however, weren't satisifed with AT&T's words. "The meeting was positive in that there was a discussion," said Mark Hatch, marketing manager for software products at Apollo Computer. "But many of us walked away even more concerned." Hatch said competing vendors are upset that "Sun is now claiming it just about owns Unix."

Giving us Dpeek. Viewers of a pre-beta-test version of Ashton-Tate's long-awaited Dbase IV say the product looks like it will be "extremely competitive in the marketplace," with superior implementations of SQL and Query By Example. Those sources expect to get beta-test copies in the next two or three weeks and a formal announcement in the next 60 days. Meanwhile, speculation was hot and heavy last week that Ashton-Tate will announce the acquisition of a high-end three-dimensional spreadsheet for Apple's Macintosh Feb. 10. The company is also reportedly close to wrapping up a deal on a high-end word processor for the Mac.

Texas barbecue flavored. Compaq will announce its version of OS/2 in New York Feb. 17, according to one source. Sources say the company will have several major applications developers present to demonstrate their products under Compaq's version.

Back in black. CDC, which teetered on the edge of a Chapter 11 filing in 1985, last week reported its first full-year profit since 1984. Although revenue was virtually flat at $3.36 million, CDC earned $19.3 million, or 45 cents per share, compared with a $264.5 million loss in 1986. CDC turned a profit despite one-time charges totaling $44.3 million, about half of which covered the anticipated cost of replacing its faulty FSD-II disk drives.

Seek advice of counsel. A press release recently announced the $4.2 million sale of the high-technology coatings division of Wedtech Corp. — the New York firm whose illegally awarded defense contracts resulted in the conviction of former White House aide Michael Deaver and the investigation of Attorney General Edwin Meese. But don't look for the Mount Vernon, N.Y.-based buyer to be diversifying into the computer business — at least not until it changes its name from Vapor Technologies, Inc.

Super status. Wisconsin and Illinois are throwing money and tax incentives at computer designer Steve Chen, each hoping to be the state in which he builds his supercomputer. Both states have reportedly been told that Chen's start-up, Supercomputer Systems, could grow from its current 45 employees to 1,000 or 2,000 in five years. That would rival the size of Chen's former company, Cray Research.

They kept their word. Double sales to reach $100 million by the end of 1987, the Wordperfect team was told by President Alan Ashton and Vice-President Pete Peterson, and we'll send you all to Hawaii for a vacation. The team pulled together and topped the $1 million mark on New Year's eve, just hours before ringing in 1988. Each employee and a spouse or relative can now go to Hawaii gratis for one week.

Hold onto those 3-D glasses. What was cited as a missing link when DEC announced its Vaxstation 3200 and 3500 in September seems ready to appear tomorrow, when DEC and Evans & Sutherland plan to announce a high-end three-dimensional graphics workstation in Boston. Analysts who have said the Vaxstation seems competitive with workstations offered by rivals Sun and Apollo did so with the caveat that DEC lacked high-performance graphics capabilities.

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At $599, the Wyse WY-60 delivers unrivaled value if you're looking for sharp resolution, advanced features and superior overall quality in an AT-compatible alphanumeric terminal.

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- **PDSUPDTE** - High speed PDS editor.
- **PRO 2** - Applications Development system, generates production-ready Cobol code for CICS and Database applications with no hooks back into itself. User evaluations state Pro 2 saves over 75% of the time used to complete a typical project. Greatly reduces applications backlog. Runs under MVS and DOS.
- **ODDS** - Automates master console management. ODDS provides prompt responses to WTO - WTOR messages, monitors and restarts critical systems such as JES, VTAM, CICS, IMS, etc. ODDS is an expert system for master console management.
- **$AVRS** - automates the handling of Sysout and Syslog. Provides a complete system for viewing, retrieval and archival of system output. Checks all JCL for errors. Provides instant access to JCL of failing jobs through any terminal. Runs under SPF. Interfaces with all popular security systems.
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